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151838

TECHNICAL SPECIFICATIONS

SITE PREPARATION AND MATERIAL REMOVAL

PRE-FINAL DESIGN
ENVIRO-CHEM SUPERFUND SITE
ZIONSVILLE, INDIANA

Prepared For:
ENVIRONMENTAL CONSERVATION AND
CHEMICAL CORPORATION TRUST

Prepared By:
AWD TECHNOLOGIES, INC.
INDIANAPOLIS, INDIANA

AWD PROJECT NUMBER 2259

DECEMBER 1992

NOTICE

This document is a portion of the overall design package and, therefore, cannot be referenced, in whole or in part, as a standalone document for any other purpose.

TECHNICAL SPECIFICATIONS
SITE PREPARATION AND MATERIAL REMOVAL

ENVIRONMENTAL CONSERVATION AND CHEMICAL CORPORATION SUPERFUND SITE

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APPENDICES

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SCOPE

A. This section includes a brief description of the major components covered under this contract. A more complete description of the work is provided in individual sections of these Specifications and on the Drawings. The Contractor shall furnish all equipment, labor, materials, health and safety, quality control services, and execution of all work necessary to complete the work for final acceptance as outlined in the attached Construction Quality Assurance Plan.

1.02 GENERAL REQUIREMENTS

A. As minimum requirements, the Contractor shall observe and comply with all applicable Federal, state, and local laws, rules and regulations in conducting the work. The Contractor shall be responsible for contacting and informing the proper Federal, state, and local agencies of the nature and timing of work activities and for securing all necessary and applicable permits required to perform the work covered by this contract.

B. The Contractor shall protect utility lines and/or appurtenances. It is the Contractor's responsibility to locate existing utilities onsite. Any damage shall be repaired by the Contractor at no expense to the Environmental Conservation and Chemical Corporation Trust (ECC Trust).

C. Materials and equipment shall be adequate in capacity for the required usage, must not create unsafe conditions, and shall meet the requirements of all applicable codes and standards.

1.03 DESCRIPTION OF WORK

A. The following work is included in this contract:

1. Temporary Site Facilities: Providing and maintaining temporary site facilities during the performance of this contract such as office trailers, security and communication operations, and the personnel decontamination facility. At the completion of the work, all temporary site facilities shall be removed from the Site.

2. Utilities: Providing, operating, and maintaining all site utilities including telephone, electricity, clean water, and sanitation.

3. Site Operations Plans: The Contractor shall prepare and implement a Contractor Quality Control Plan (CQCP), a Contractor Health and Safety Plan (CHSP), and a Contractor Site Management Plan (CSMP) for use during construction and implementation of the site preparation and material removal activities. The Contractor shall also be responsible for implementation of the Field Sampling Plan, Quality Assurance Project Plan, Construction Quality Assurance Plan, Site Management Plan, Environmental Control and Maintenance Plan, and Air Monitoring Plan.

   The Contractor shall comply with the requirements of the Contract Documents: Construction Quality Assurance Plan, Health and Safety Plan, and Site Management Plan as guidance for preparation of the CQCP, CHSP, and CSMP.

4. Tanks: There are 53 tanks staged along the northwest corner of the Site which shall be removed and transported to an approved scrap/salvage dealer for final disposal.

5. Drums: Removal of all the drums containing wastes and/or empty, and transportation to an approved offsite facility for final disposal.

   There are approximately 270 drums to be removed, but this number could increase as a result of additional field investigations prior to award of this Contract.

6. Structures: Removal of the structures onsite which include an A-frame house and a process building and the associated contents. The structures shall be dismantled and transported to an approved offsite facility for final disposal. The metallic building materials such as steel beams and aluminum siding shall be decontaminated and transported to an approved offsite scrap/salvage facility.

7. Miscellaneous Debris Areas: Removal of all the miscellaneous site debris from the designated areas and transportation to an approved offsite facility for final disposal.

8. Soil Vapor Extraction (SVE) Pilot Study Area: Removal of all above ground piping and associated debris, and transportation to an approved offsite facility for final disposal.

9. Other Site Debris: Removal of all other site debris not previously defined above as "Miscellaneous Debris Areas." This includes the modular tanks and wood pile on the southern concrete pad and other debris scattered across the Site. This material shall be transported to an approved offsite facility for final disposal.

10. Existing Fencing: The existing fence shall be removed to the limits shown on the Drawings. This material shall be transported to an approved offsite facility for final disposal.

11. Access Roads, Support Zone, Supplemental Storage Area, and Parking Areas: The Contractor shall prepare and maintain site access roads, the support zone, and supplemental storage area, and the parking areas at the location shown on the drawings.

12. Demobilization: Removal from the Site of all Contractor equipment, and removal of the temporary facilities. The Contractor shall leave the site security fence and gates, equipment decontamination pad, the wastewater storage pad, and utilities onsite.

13. All other activities to satisfactorily complete all work covered by these Specifications and Drawings not specifically discussed but necessary for the project construction and final acceptance.

14. All other work required by the ECC Trust under the terms of this contract.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01012 - SUMMARY OF SITE CONDITIONS

PART 1 - GENERAL

1.01 SCOPE

A. This section presents a summary of the physical and chemical conditions at the Site encountered during the remedial investigation and subsequent site visits. The Contractor shall make his own determination of the potential hazards at the Site from the information contained herein and from other available information as appropriate. The ECC Trust make no representation or warranty, expressed or implied, as to the accuracy of any information with respect to site conditions. This disclaimer is in addition to, and not in lieu of, any other disclaimers that may appear in the Contract Documents.

1.02 SITE DESCRIPTION AND HISTORY

A. Site Description:

1. The ECC Site is a Federal Superfund Site listed on the National Priorities List (NPL) which is a ranking of hazardous waste sites compiled by the Federal government as part of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

2. The ECC Site is located north of Zionsville Indiana, in Boone County, approximately 10 miles northwest of Indianapolis on State Route 421. The Site occupies about 6.5 acres of land west of the Northside Sanitary Landfill (NSL), an inactive solid waste disposal facility also on the Superfund list. The Site is bounded on the south and east by NSL property, with an unnamed ditch separating the two facilities along the east boundary. The Site is bounded on the west and north by Boone County Resource Recovery Systems, Inc. (BCRRS) property. Several residential homes are located within 1/2 mile of the facility on the north and west sides.

B. History:

1. ECC began site operations in 1977 and was engaged in the recovery, reclamation, and brokering of primary solvents, oils, and other wastes. Waste products were received in drums and bulk tankers and then prepared for subsequent reclamation or disposal. Reclamation processes included distillation, evaporation, and fractionation to reclaim solvents and oil.

2. ECC was placed into receivership in July 1981. Drum shipments to the Site were halted in February 1982, and the Site closed for business in May, 1992. Surface cleanup activities conducted by United States Environmental Protection Agency (U.S. EPA) and Potentially Responsible Party (PRP) contractors during 1983 and 1984 included the removal of cooling pond waters, waste drums, tank waste, contaminated soil, and cooling pond sludge.

1.03 GENERAL SITE CONDITIONS

A. Site conditions present chemical and physical hazards. Sources of potential chemical contamination identified during the feasibility study include: tanks and drums containing liquids and solids, structures, miscellaneous debris, and the SVE pilot study area waste. Physical hazards on the Site include buildings with damaged roofs, slippery surfaces, uneven floor surfaces, debris, and large equipment on the floor.

1.04 SURFACE CONDITIONS

A. General: The existing site conditions are presented on Drawing Number C-1, and the removal items are presented on Drawing Number C-4. The property is generally flat and has several concrete pads, building floor slabs, and foundations as shown on the Drawings.

B. Tanks: There are 53 tanks staged on the ground in the northwest portion of the Site. Appendix A includes Table 1, titled "Tank Inventory Summary Table" which includes approximate tank dimensions, tank conditions, tank contents, and other comments as applicable.

C. Drums: There are approximately 270 drums located on the Site with approximately 250 of them currently stored on the southern concrete pad. The majority of the drums are labeled as containing materials from previous work at the Site, including drill cuttings, well development water, and personal protective equipment. Appendix A includes Table 2, titled "Drum Storage Area Inventory Summary Table" which includes descriptions of the drums located on the southern

concrete pad. The quantity of drums could increase as a result of additional field investigations prior to award of this Contract.

D. Structures: Two structures, an A-frame house and a process building, currently exist on the Site. Appendix A includes Table 3, titled "Structure Inventory Summary Table" which includes approximate dimensions, building materials, and contents of the structures.

E. Miscellaneous Debris Areas: There are six miscellaneous debris areas which have been identified within the Site. Appendix A includes Table 4, titled "Miscellaneous Debris Area Inventory Summary Table" which includes a listing of the items that comprise each area.

F. SVE Pilot Study Area: There remains onsite material from Terra Vac's 1988 SVE pilot study. Appendix A includes Table 5, titled "SVE Pilot Study Area Inventory Summary Table" which includes the approximate quantity of above ground piping and other associated debris.

G. Other Site Debris: This is composed of all other site debris not previously mentioned which exists onsite. Appendix A includes Table 6, titled "Other Site Debris Inventory Summary Table" which includes descriptions of this material.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01015 - SEQUENCE OF WORK

PART 1 - GENERAL

1.01 GENERAL SEQUENCE OF WORK ACTIVITIES

A. The individual work tasks at the Site shall be conducted in the sequence indicated in this section. The sequencing includes both concurrent operations and operations that must be completed before or after other construction activities.

B. The Sequence of Work shall not be changed without the prior written approval of the ECC Trust's Engineer (Engineer).

C. The following sequence of work shall be used on the project:

1. Site Preparation:

a. Field surveying.

b. Mobilization of Contractor equipment and personnel required for construction activities to the Site.

c. Removal of the existing fence.

d. Installation of stormwater ditches, culverts, and temporary construction fence.

e. Installation of new site security fence and gates as required for the support zone area.

f. Grading, aggregate placement, access road, support zone, supplemental storage areas, and parking area construction.

g. Installation of equipment decontamination pad and wastewater storage pad.

h. Installation of temporary site facilities and utilities.

i. Installation of exclusion zone fence.

2. Removal Operations:

   a. Removal of tanks.

   b. Removal of drums.

   c. Removal of structures.

   d. Removal of miscellaneous debris areas.

   e. Removal of SVE pilot study area.

   f. Removal of other site debris.

3. Demobilization:

   a. Removal of temporary facilities. The Contractor shall leave the temporary construction fence, the site security fence, equipment decontamination pad, and the wastewater storage pad onsite.

   b. Removal of Contractor equipment and personnel from the Site.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01040 - COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. The work required by this section shall consist of the Contractor's responsibility to coordinate and communicate project activities with the ECC Trust, all subcontractors, and other parties (e.g., private landowners and Federal, state, and local agencies).

B. The items included under this section are the provision of labor, materials, and equipment and the coordination of the Contractor with all involved parties.

1.02 GENERAL OBLIGATIONS

A. The Contractor shall be responsible for coordinating and communicating with all Federal, state, and local emergency authorities to develop and implement emergency response plans and activities.

B. General obligations of the Contractor shall be as set forth in the Contract Documents. All incidental work and expense in connection with the completion of work under the Contract will be considered a subsidiary obligation of the Contractor, and all such costs shall be considered included in the appropriate items in the Bid Form in connection with which the costs are incurred.

C. The Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall cooperate with all firms or persons authorized to perform any work at or adjacent to the project site, and shall assist in incorporating the work of other trades.

1.03 SITE CONDITIONS

A. Drawings show relative locations and approximate sizes and quantities of materials. The Contractor shall verify the accuracy of the Drawings during construction.

B. Modifications in the work due to minor interferences and structural obstructions shall be accomplished as part of the work at no additional cost. The Engineer will determine what constitutes minor interferences.

PART 2 - PRODUCTS

2.01 GENERAL

A. The choice of quantity and type of labor, materials, and equipment shall be at the discretion of the Contractor, but must be available at the quality and quantity to perform the work required by the Contract Documents and schedule constraints.

B. The Contractor shall furnish equipment which will be appropriate to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the project schedule. If at any time such equipment appears to the Engineer to be inefficient, inappropriate, or insufficient for achieving the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character, or increase the equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such an order shall in no way relieve the Contractor of its obligations to achieve the quality of the work and rate of progress required.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

A. The Contractor shall not unload or store materials in areas where these actions will interfere with the progress of the project or impede the work onsite.

B. The means and methods of performing the operations, within the constraints detailed in these Specifications, are the sole responsibility of the Contractor.

3.02 PROTECTION OF WORK, PROPERTY AND PERSONS

A. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage or injury to all employees on the work and other persons who may be affected thereby; all the work and all materials or equipment to be incorporated therein, whether in storage on or off the Site; and other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, buildings, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

B. In emergencies affecting the safety of persons or the work or property at the Site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer, is obligated to act, at its discretion, to prevent threatened damage, injury, or loss. The Contractor shall give the Engineer written notice of any significant changes in the work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued, if necessary, to cover the changes and deviations involved. If the Contractor believes that additional work done by it in an emergency which arose from causes beyond its control entitles it to an increase in the Contract Price or an extension of the Contract Time, it may make a claim therefore.

C. If, in the opinion of the Engineer, permanent relocation of a utility, not identified for relocation, is required, the Engineer may direct the Contractor, in writing, to perform the work. If relocation of a publicly owned utility is required, the Contractor will notify the utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the utility, and shall have no claim for delay due to such relocation.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01050 - FIELD ENGINEERING AND SURVEYING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes surveying services for accurate location of all features of construction, such as the site security fence, remedial boundary, exclusion zone boundary, equipment decontamination pad, wastewater storage pad, and any other features as required by the Engineer.

1.02 QUALITY CONTROL

A. The Contractor is responsible for all the surveying done at the Site. The Surveyor shall be a qualified and Registered Land Surveyor in the State of Indiana. This representative shall also have a minimum of 2 years of experience in construction surveying layout and maintenance of as-built construction drawings with a record of performing horizontal and vertical control requirements as stated in this section.

1.03 SUBMITTALS

A. Name, address, Indiana registration number, and telephone number of Surveyor shall be submitted by the Contractor to the Engineer for approval before starting survey work.

B. On request, documentation verifying accuracy of survey work shall be submitted to the Engineer by the Contractor.

C. Certificates signed by the Surveyor stating that elevations and locations of site constructed features are in conformance, or nonconformance, with Contract Documents shall be submitted to the Engineer at the completion of each phase of work requiring services of the Surveyor.

D. Copies of Surveyor's field notes, calculations, and graphical layouts.

E. Certificates signed by the Surveyor stating the accuracy of quantities submitted for payment purposes.

1.04 PROJECT RECORD DOCUMENTS

A. A complete, accurate log of control and survey work as it progresses shall be maintained at work site by the Contractor.

B. Upon completion of the work, all record documents must be submitted to the Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 INSPECTION

A. The Contractor shall verify locations of site reference and survey control points prior to starting work. The Engineer must be promptly notified of any discrepancies discovered.

3.02 SURVEY REFERENCE POINTS

A. The Engineer will identify to the Contractor all site reference points as shown on the Drawings.

B. The Contractor will take all reasonable measures to protect site references and survey control points prior to starting site work, and must preserve permanent reference points during construction. Site reference points may not be relocated without prior written approval of the Engineer.

C. The Engineer will be immediately notified of loss, damage, or destruction of any reference point, or any relocation required because of changes in grade or other reasons.

D. The Contractor shall establish two permanent elevation benchmarks and two horizontal control points located within and near the perimeter fence in positions unlikely to be disturbed by vehicular traffic or construction operations, one of which shall be near the entrance gate. The other benchmark shall be placed such as to be visible from the first, without obstruction by construction.

The benchmarks and horizontal control points shall be established using the existing control points set by Schneider Engineering or other acceptable reference points approved by the Engineer.

E. Benchmarks shall consist of a 2 1/2-inch diameter convex brass plate that is embedded in 8-inch diameter by 36-inch long (minimum) concrete. Brass plate shall have the elevation stamped on it. The top of concrete shall be rounded upward from surrounding soil toward the plate and troweled smooth to shed water.

F. Survey control points shall consist of 5/8-inch diameter rebar at least 30 inches long, encased in 8-inch diameter by 36-inch long (minimum) concrete. Rebar shall project about 1/2 inch above finished top of concrete. Top of concrete shall be rounded upward from surrounding earth toward the rebar, and troweled smooth to shed water.

G. X, Y, and Z coordinates of benchmarks and survey control points shall be determined and recorded with a maximum permissible error of 0.10 feet in any coordinate direction.

3.03 SURVEY REQUIREMENTS

A. The Contractor shall establish lines and levels, and locate and layout by instrumentation and similar appropriate means, all site features to be constructed. These include, but are not limited to the following:

1. Site Preparation:

a. New perimeter site security fence.

b. Remediation boundary.

c. Exclusion zone boundary.

d. Rough grading of support zone area including Contractor parking area and supplemental storage area.

e. Support zone facilities layout including equipment decontamination pad and wastewater storage pad.

f. Drainage ditches, the unnamed ditch, and associated culverts.

B. The Contractor will reverify layouts periodically during construction by same means.

3.04 SURVEYS FOR MEASUREMENT AND PAYMENT

A. The Contractor shall perform surveys to determine quantities of all work whose payment is specified to be based on in-place volumes, areas, or lengths.

B. The Contractor's Field Superintendent shall be required to sign the Surveyor's field notes and computations, and shall keep duplicate field notes and computations, and shall certify quantities for payment purposes.

C. Surveys for measurement and payment (including field notes, computations, and results) shall be reviewed and approved by the Engineer.

3.05 REMEDIATION BOUNDARY SURVEY

A. Before initiating construction, the Contractor shall make, by Surveyor, a remediation boundary survey that verifies in the field the exact locations of all boundary corners and angle points, and marks these points as survey control points.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01210 - PRE-CONSTRUCTION AND PRE-WORK CONFERENCES

PART 1 - GENERAL

1.01 SCOPE

A. This section covers the conferences required after the Notice to Proceed but prior to commencing with construction.

1.02 PRE-CONSTRUCTION CONFERENCE

A. After the Contract is awarded and within 10 working days after issuance of the Notice to Proceed, the Contractor shall meet with the Engineer, the United States Environmental Protection Agency (U.S. EPA), and the Indiana Department of Environmental Management (IDEM) for a Pre-Construction Conference. The purpose of this conference is to designate responsible personnel and establish working relationships. Matters requiring coordination will be discussed and procedures for handling such matters will be established. The agenda will include the review of the Contractor's tentative schedules; procedures for the transmittal, review, and distribution of submittals; project planning documents; processing progress payment applications; Contractor assignments for payrolls and labor relations; environmental protection; maintaining record documents; field decisions and Change Orders; uses of site premises; office and storage area layout; site security; housekeeping; and major equipment and materials deliveries and priorities.

1.03 PRE-WORK CONFERENCE

A. Within 30 working days after the Notice to Proceed and prior to any site work being performed, a Pre-Work Conference will be held between the Contractor, the Engineer, U.S. EPA, and IDEM. Attendance by the Contractor's superintendent, quality control personnel, safety personnel, and any major subcontractor's superintendents will be required.

B. The purpose of this conference is to further define the quality control system and to thoroughly review the Construction Quality Control Plan (CQCP). The specifics of the Contractor's other submittals will also be discussed so the emergency procedures and health and safety requirements are understood by all those directly related to the site work. The other Contractor procedures will also be discussed and any required modifications will be explained.

C. At least 10 working days prior to the Pre-Work Conference, the Contractor shall submit his proposed CQCP and Progress Schedule. The CQCP will be reviewed to provide an understanding of the quality control system. The Contractor's Progress Schedule will be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.

1.04 CONFERENCE RECORDS

A. The Engineer shall take notes of each conference and distribute copies of minutes to participants in each conference and to parties affected by decisions made at each conference.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01220 - PROGRESS MEETINGS

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall attend progress meetings at a minimum of once per week and such additional meetings as required, when scheduled by the Engineer. The Contractor shall attend these meetings with all necessary personnel. U.S. EPA and IDEM or their designated representatives shall be invited to attend these meetings.

1.02 GENERAL REQUIREMENTS

A. The Engineer shall perform the following for the progress meetings:

1. Prepare agenda for meetings.

2. Make physical arrangements for meetings.

3. Preside at meetings.

4. Record the minutes, including significant proceedings and decisions.

5. Reproduce and distribute copies of minutes after each meeting to participants in the meeting and to parties affected by decisions made at the meeting.

B. Typical Agenda:

1. Review and approval of minutes of previous meeting.

2. Review of work progress since previous meeting.

3. Discussion of field observations, problems, or conflicts.

4. Discussion of problems that impede construction schedule.

5. Review of delivery schedules for limiting equipment and supplies.

6. Discussion of corrective measures and procedures to regain projected schedule.

7. Revision to construction schedule.

8. Review of planned progress during succeeding work period.

9. Coordination of schedules.

10. Review of submittal schedule; expedition as required.

11. Maintenance of quality and safety standards.

12. Discussion of pending changes and substitutions.

13. Review of proposed changes for effect on construction schedule and on completion date.

14. Discussion of other business.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide the submittals required by these Specifications for the Engineer's review.

B. The Engineer will provide copies of all submittals to the U.S. EPA and IDEM for review. The Engineer's approval of any submittal will be contingent upon U.S. EPA and IDEM review.

1.02 SUMMARY OF SUBMITTALS

A. The submittals which the Contractor is required to provide include, but are not limited to, those specified by the following sections:

1. Section 01050: FIELD ENGINEERING AND SURVEYING:

a. Name, address, Indiana registration number, and telephone number of Surveyor.

b. Conformance certificates signed by Surveyor.

c. On request, documentation verifying accuracy of survey work.

d. Copies of Surveyor's field notes, calculations, and graphical layout.

e. Certificates signed by surveyor stating the accuracy of quantities submitted for payment purposes.

2. Section 01310: PROGRESS SCHEDULES AND REPORTS:

a. Initial Progress Schedule.

b. Final Progress Schedule.

c. Revised Progress Schedules.

d. Monthly Progress Reports.

(1) Invoices

(2) Photographs

(3) Contract Documents

3. Section 01380: CONSTRUCTION PHOTOGRAPHS:

a. Photographs (quantities as per Specification).

b. Negatives (quantities as per Specification).

4. Section 01385 - APPROVALS AND PERMITS:

a. Letters of Commitment.

b. Waste hauler information.

c. Disposal facility information.

d. Approvals and permits.

e. Special Waste Certification Application.

5. Section 01390: HEALTH AND SAFETY:

a. Contractor Health and Safety Plan.

b. Employee Training Records.

c. Equipment Lists.

d. Daily Safety Logs.

e. Training Logs.

f. Air Monitoring Results Reports.

g. Weekly Safety Reports.

h. Close-Out Safety Report.

i. Examining Physician Qualifications.

j. HSO and SSO Qualifications.

k. Employee Medical Approval (Physician Statements).

l. Accident Reports.

m. Calibration Records.

6. Section 01392 - QUALITY ASSURANCE:

a. Laboratory Data.

b. Validated Data.

c. Field Measurements Logbook.

d. Sample Collection Data Logbook.

e. Chain-of-Custodies.

f. QA Non-Conformances - Field.

g. QA Non-Conformances - Laboratory.

7. Section 01393 - CONSTRUCTION QUALITY ASSURANCE:

a. Construction Quality Assurance Manager's Reports.

(1) Progress Reports.

(2) Daily Quality Control Reports.

(3) Corrective Actions Report.

(4) Photographic Reporting Data Sheets.

(5) Report of Field Changes.

(6) Construction Manager Daily Reports.

(7) Submittal Register.

(8) Non-Compliance Notification.

(9) Material Certifications with CQC Transmittal Form.

(10) Final Certification of Completion.

8. Section 01395 - ENVIRONMENTAL CONTROL AND MAINTENANCE:

a. Environmental Conditions Survey Report.

9. Section 01396 - AIR MONITORING:

a. Air Monitoring Reports.

1. Phase I - Baseline.

2. Phase II - Site Preparation and Material Removal.

b. Analytical Results (Verbal and Written).

c. Sample Information Sheets.

d. Meteorological Data.

e. Calibration Records.

10. Section 01397 - SITE MANAGEMENT:

a. Contractor Site Management Plan.

11. Section 01400: CONTRACTOR QUALITY CONTROL:

a. Contractor Quality Control Plan.

12. Section 01410: TESTING LABORATORY SERVICES:

a. Name, address, and telephone numbers of testing laboratory(ies).

b. Names and qualifications of full-time Engineer(s) and responsible officer for laboratory(ies).

c. Laboratory inspection reports.

d. Laboratory certificates.

e. Statement designating test to be performed, schedule, and frequency.

13. Section 01525 - PROJECT IDENTIFICATION AND SIGNS:

a. Drawings showing sign content, layout, lettering, and colors.

14. Section 01700: PROJECT RECORD DOCUMENTS/CONTRACT CLOSE-OUT:

a. Project record documents and transmittal letter.

15. Section 02175 - CULVERTS:

a. Manufacturer's product data.

b. Certificates of Conformance.

16. Section 02180 - MANHOLES:

a. Manufacturer's product data.

b. Certificates of Conformance.

17. Section 02280 - GEOTEXTILES:

a. Product samples.

18. Section 02700 - EROSION CONTROL:

a. Silt fence fabric product sample.

19. Section 02900: OFFSITE TRANSPORTATION AND DISPOSAL:

a. Copies of certificates of required insurance.

b. Copies of government permits and licenses.

c. Offsite Spill Contingency Plan.

d. Way-bills, weigh-in/weigh-out tickets, manifests.

e. Weigh scale certification.

20. Section 03200: CONCRETE REINFORCEMENT:

a. Manufacturer's certification of product.

21. Section 03250 - CONCRETE JOINT ACCESSORIES:

a. Catalog cuts.

b. Product samples.

B. Submission Requirements:

1. Coordination of Submittal Items:

Prepare and transmit each submittal 5 working days in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times including revision and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the work.

2. Number of Submittals Required:

a. Submit four copies unless stated elsewhere in the Contract Documents or as directed by the Engineer.

3. All submittals, regardless of origin, shall have the following identification data, as applicable, contained thereon or permanently adhered thereto:

a. Date of submission and dates of any previous submissions.

b. Project name and contract number.

c. Contractor's name and address.

d. Supplier's name and address.

e. Manufacturer's name and address.

f. Submittal or resubmittal number.

g. Title or identification of submittal.

h. References to applicable Specification paragraphs and Drawings.

i. Contractor's Certification Statement.

j. Deviations from Contract Documents.

C. Resubmission Requirements:

1. Make any corrections or changes in the submittals required by the Engineer and resubmit until approved.

2. Indicate any changes that have been made in addition to those requested by the Engineer.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01310 - PROGRESS SCHEDULES AND REPORTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes procedures for preparation and submittal of the Contractor's Progress Schedule, periodic updating of the Contractor's Progress Schedule, and Monthly Progress Reports. The Contractor's Progress Schedule shall be prepared using Primavera or equivalent software.

1.02 SUBMITTALS

A. The Contractor's Progress Schedule shall be submitted to the Engineer for review at least 10 working days prior to the Pre-Work Conference. The Contractor's Progress Schedule will be discussed at the Pre-Work Conference.

B. The Contractor's Progress Schedule shall be updated periodically and shall be submitted with each regular progress meeting.

1.03 FORMAT

A. Progress schedule shall be presented in the form of a bar chart.

B. Identify the project as ECC Site at the top of progress schedule.

C. Each major task or segment of work shall be represented by one horizontal bar.

D. Milestone dates for the completion of each phase of work shall be indicated.

E. Sequence of Listings: The chronological order of the start of each major operation or segment of work will determine the vertical location of its bar on the chart.

F. Horizontal Time Scale: Bold vertical lines for weeks, light vertical lines for days, with date given for beginning of each week.

G. Scale and Spacing: To allow space for notations and future revisions.

H. Minimum Sheet Size: 11 inches by 17 inches.

1.04 CONTENT

A. The complete sequence of work by activity shall be shown, with dates for beginning and completion of each major segment.

B. The bar representing each major operation or segment of the work shall be identified by Specification section number coinciding with items of these Specifications.

C. A subschedule bar chart shall be prepared to define critical portions of major tasks.

D. Estimated accumulated percentage of completion of each item, and estimated total percentage of work completed as of the last day of each month shall be noted at appropriate points on the chart.

1.05 REVISIONS TO SCHEDULES

A. Progress of each activity to the date of revision submittal, shall be indicated and an estimate given for completion date.

B. Changes that occurred since previous schedule submittal shall be shown:

1. Changes in scope or quantities.

2. Activities modified.

3. Revised estimates of progress and completion.

4. Other changes.

C. A narrative report shall be prepared at the Engineer's request to define:

1. New problem areas, expected delays, and their impact on schedule.

2. Corrective action taken or proposed, and their effects.

3. The effects of changes made or proposed on the functioning of subcontractors.

D. Schedule revisions and date revisions shall be consecutively numbered and dated.

1.06 MONTHLY PROGRESS REPORTS

A. Contractor Monthly Progress Report:

1. The Contractor will prepare a Monthly Progress Report for submittal to the Engineer which shall include:

a. Validated sampling and/or test data generated since the last report.

b. Description of all portions of the work completed and other appropriate supporting documentation such as:

(1) Invoices.

(2) Photographs.

(3) Contract documents.

c. Describe all actions, data, and plans which are scheduled for the next month including information relating to the progress of construction.

d. Information regarding percentage of completion and unresolved delays.

1.07 DISTRIBUTION AND REVIEW

A. Progress Schedule:

1. Five copies of updated schedules will be distributed to the Engineer.

2. All distributions will be transmitted with a cover letter.

3. Latest schedule is to be posted at the job site.

4. The Engineer will review and return each submittal of progress schedules within 1 week after receipt.

5. Contractor will resubmit within 3 days after return of review copy, if required.

B. Monthly Progress Reports:

1. Contractor Monthly Progress Report:

a. Five copies of the Monthly Progress Report will be distributed to the Engineer by the 4th day of each month.

b. The Engineer will review and return each submittal of the progress report by the 8th day of each month.

c. The Contractor will revise the progress report and submit five copies to the Engineer by the 10th day of each month.

d. The Engineer will submit the progress report to the U.S. EPA and IDEM by the 14th day of each month.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01380 - CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 SCOPE

A. This section covers project photographs to be submitted by the Contractor in order to document site preparation and material removal activities.

1.02 GENERAL REQUIREMENTS

A. The documentation shall provide a complete record of events including progression of work, potential and actual problems and solutions, and actual conditions which may vary from contract conditions.

B. Photographs shall be taken throughout the project period as approved by the Engineer. Each photograph shall be processed in color prints. Photographs shall be legible and of clear professional quality.

1.03 SUBMITTALS

A. Photographs:

1. The Contractor shall provide 3-inch x 5-inch glossy color photographs and mounted 2-inch x 2-inch color slides of the following work tasks and areas. A minimum of two individual views is required for each item as shown in parentheses:

a. Before the work begins:

(1) All areas designated temporary and permanent easements (two each area).

(2) Proposed locations of temporary site facilities (two each Site).

(3) Staging areas (two each).

(4) Equipment decontamination pad location (two).

(5) Access gates (two each).

(6) Existing roads to access the Site (two each).

b. At the completion of site preparation, two views shall be obtained for each added facility.

c. During the project work all major work activities at least once per month and at such intervals as necessary to provide complete documentation. The following shall be considered major activities as a guide in selecting photograph locations. Two views of each activity shall be provided:

(1) Construction of temporary facilities, utilities, and access roadways to the Site.

(2) Construction of site security fence.

(3) Construction of decontamination facilities and contamination reduction zone facilities.

(4) Site grading, drainage, and landscaping.

(5) Other activities considered important in demonstrating work progress.

(6) Tank removal.

(7) Drum removal.

(8) Structure demolition and removal.

(9) Miscellaneous debris area removal.

2. Two 3-inch x 5-inch color prints and four color slides of each photograph shall be provided.

3. The photography effort shall be spaced out, as appropriate, over each activity period to provide views representative of the entire project work.

4. The prints and slides with appropriate identification and other information as directed shall be delivered to the Engineer as soon as they have been processed. Identification shall include the date of the photograph and a brief description of photograph coverage. Each photograph shall be numbered in sequence. Each photograph shall be cross referenced with a map showing the photograph number and directional arrow of the shot.

5. At least once a month, the Contractor shall furnish aerial views of the Site from low elevation. One view shall be shot directly from overhead showing the entire Site on one photograph, with additional views showing areas of active work in greater detail. The Contractor shall furnish four 8-inch x 10-inch color photographs and two 2-inch x 2-inch mounted slides of each view.

B. Negatives:

1. Negatives are to be delivered to the Engineer with Record Documents. Negatives shall be catalogued and indexed in chronological sequence with a typed table of contents.

2. All photographs and negatives are the property of the ECC Trust and shall not be released by the Contractor to the public, news media, or anyone else without prior written permission of the Engineer after consultation with the ECC Trust.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01385 - APPROVALS AND PERMITS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the requirements for the waste haulers and the disposal facilities.

1.02 LETTERS OF COMMITMENT

A. Letters of Commitment shall be obtained by the Contractor from waste haulers and from the disposal facilities who will handle and dispose of wastes removed from the Site. In the event that a disposal facility is prohibited from issuing a Letter of Commitment without a sample of the waste, a conditional type of letter will be acceptable. Such a conditional letter shall specifically state what types and quantities of waste the facility will accept.

B. The Letter of Commitment shall be submitted with the Contractor's bid.

1.03 SUBMITTALS

A. The following information shall be submitted with the Letters of Commitment.

1. Waste Haulers.

a. Name and U.S. EPA identification number.

b. Address.

c. Name and telephone number of responsible contact for the hauler.

d. List of types and sizes of transport vehicles and equipment to be used.

e. A description of proposed transportation methods and procedures for hauling waste material.

f. Any and all necessary permit authority for each type of waste transported.

2. Disposal Facilities:

a. Hazardous Disposal Facilities:

(1) The Contractor shall submit the following information on RCRA approved offsite disposal facilities where he is planning to take contaminated materials from the Site:

(a) Facility name and U.S. EPA identification number.

(b) Facility location.

(c) Name and telephone number of responsible contact for the facility.

(d) Signed Letter of Agreement to accept wastes from this Site.

b. Non-Hazardous Disposal Facilities:

(1) The Contractor shall submit the following information on non-hazardous disposal facilities where he is planning to take non-hazardous materials from the Site:

(a) Facility name.

(b) Facility location.

(c) Name and telephone number of responsible contact for the facility.

(d) IDEM special waste certification approval.

B. Approvals and Permits.

1. Prior to award of the Contract, the following information shall be required by the U.S. EPA and the ECC Trust:

a. A listing of all permits, licenses, letters of approval, and other authorizations to operate held by the proposed facility as they pertain to receipt and management of wastes derived from this contract.

b. A listing of all permits, licenses, letters of approval, and other authorizations to operate applied for by the proposed facility but not yet granted or issued. Provide dates of application(s) submitted. Planned submittals shall also be noted.

c. Specify and describe the unit(s) at the facility proposed to be used to manage site-derived waste and provide dates of construction and beginning of use. Drawings may be provided. Identify the capacity available in the units and the capacity reserved for the subject waste.

d. Provide the date of the proposed facility's last compliance inspection performed by any governmental unit, including RCRA, if applicable.

e. List all active completed compliance orders (or agreements), enforcement notices, or notices of violation issued to the proposed facility. State the source and nature of the cause of contamination, if known. If groundwater contamination is noted, provide details of facility groundwater monitoring program.

f. State whether the proposed facility will certify compliance with all applicable RCRA groundwater monitoring and financial responsibility requirements on or before the contract Notice to Proceed date. (Applies only to RCRA-regulated disposal facilities.)

C. Application for Special Waste:

1. Appendix E contains a sample Special Waste Certification Application for special waste approval by IDEM.

2. The Contractor shall submit a completed application to IDEM for approval to dispose of the structures and their contents, miscellaneous debris areas, SVE pilot study area, other site debris, existing fencing, and site clearing items as special waste in an approved IDEM permitted municipal solid waste landfill.

3. The Engineer will direct the Contractor as to which materials need sampled in order to receive the Special Waste Classification from IDEM.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01390 - HEALTH AND SAFETY

PART 1 - GENERAL

1.01 SUMMARY

A. This section covers the technical requirements and guidelines for preparation of the Contractor's Health and Safety Plan (CHSP). This plan shall establish, in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with each task performed by the Contractor and its subcontractors, and shall comply with all applicable laws and regulations including OSHA.

B. A general Health and Safety Plan (HSP) has been prepared and is a part of the Contract Documents. This HSP shall provide the overall general requirements for project health and safety and shall be used by the Contractor as a guideline for the CHSP.

1.02 RESPONSIBILITIES

A. The CHSP shall be prepared by the Contractor and submitted in accordance with the requirements of Section 01300 - SUBMITTALS. The approved CHSP, complete with all comments addressed, shall become part of the Contract Documents.

B. Project Management:

1. The Contractor shall be responsible for the implementation and enforcement of all health and safety practices as described/outlined in the CHSP. This would include, but not be limited to, all precautions for safety and would provide the necessary protection to prevent damage, injury, or loss to work equipment or materials, property including adjacent property, Contractor, subcontractor, and other authorized personnel.

C. Health and Safety Officer:

1. The Contractor shall utilize the services of an industrial hygienist certified by the American Board of Industrial Hygiene in Comprehensive Practice to serve as the Project Health and Safety Officer (HSO). The HSO will be responsible for developing and implementing the CHSP, conducting initial onsite training, and providing onsite consultation to ensure the

CHSP is fully implemented. The HSO shall also be part of the Quality Control (QC) staff. The qualifications of the HSO shall include:

a. Minimum of 3 years experience in developing and implementing health and safety programs at hazardous waste sites.

b. Demonstrated experience in supervising professional and technician level personnel.

c. Demonstrated experience in developing worker exposure assessment programs and ambient air monitoring programs including the siting of monitoring and meteorological stations.

d. Demonstrated experience in the use of computerized data bases to compile, collate, and analyze exposure data.

2. The name, qualifications, and work experience of the HSO shall be submitted along with the Contractor's Bid. Any substitution of this position must be requested by the Contractor in writing and formally approved by the Engineer.

D. Health and Safety Site Officer:

1. The Health and Safety Site Officer (SSO) shall assist and represent the HSO in the implementation and enforcement of the CHSP. The SSO shall be assigned to the project on a full-time basis and shall be a Contractor's employee who reports to the HSO in matters pertaining to site safety and health. The SSO shall be responsible for the day-to-day administration of the overall program and implementation of the CHSP. The qualifications of the SSO shall include:

a. A minimum of 2 years working experience at hazardous waste sites with demonstrated experience in working with Level B personal protective equipment.

b. Demonstrated experience in construction safety techniques and procedures.

c. A working knowledge of Federal and state health and safety regulations.

d. Specific training in personal and respiratory protective equipment program implementation and in the proper use of air monitoring instruments, air sampling methods, and procedures. Such training shall be conducted by the HSO or with the concurrence of the HSO.

e. Certification as having completed Cardiopulmonary Resuscitation/Basic Life Support (CPR/BLS) (American Heart Association and/or American Red Cross).

2. The name, qualifications (education summary and documentation), and work experience of the SSO shall be submitted and approved by the Engineer prior to commencement of the Contractor's work at the Site. Duties of the SSO shall include, but not be limited to, the following:

a. Review and confirm changes in personal protective clothing or respiratory protection requirements.

b. Ensure that all workers entering the Site have appropriate medical examinations and hazardous waste training.

c. Conduct site-specific training for Contractor, Subcontractor, and all other authorized site personnel.

d. Advise workers on changes related to health and safety at the Site.

e. Provide overall supervisory control for all health and safety protocols in effect for the project.

f. Conduct periodic training sessions in proper use and maintenance of personal protective equipment and safety practices.

g. Work stoppage when safety conditions merit.

h. Conduct and supervise any necessary health and safety monitoring.

i. Supervise decontamination to ensure complete decontamination of all personnel, tools, and equipment.

j. Monitor/evaluate heat and cold stress, utilizing appropriate health and safety practices.

k. Review all medical monitoring documentation and prepare any accident/incident reports required.

l. Assure that all personnel onsite are acquainted with the provisions of the health and safety plans.

m. Conduct any necessary real-time monitoring.

n. Prepare and review all health and safety-related documentation.

o. Conduct any necessary baseline, personal, or daily air sampling and analysis, utilizing appropriate pumps and media.

p. Coordinate activities of industrial hygiene technician(s), if necessary.

q. Inform the HSO of health and safety activities at the Site.

E. Industrial Hygiene Technician:

1. The Contractor may use an Industrial Hygiene Technician(s) (IHT) to assist the SSO. An IHT shall have appropriate training equivalent to the SSO in the specific area(s) in which they have responsibility. The IHT shall not serve as a replacement for the SSO, but only function as an assistant. All IHTs must be under the supervision of the SSO.

2. The name(s), qualifications (education summary and documentation), work experience, and specific job function(s) shall be submitted and approved by the Engineer prior to commencement of work by the IHT(s) onsite.

F. Examining Physician:

1. The Contractor shall utilize the services of a licensed physician with experience in the practice of occupational medicine. The examining physician shall be responsible for developing a medical monitoring program in compliance with Title 29 Code of Federal Regulations (CFR), Part 1910.120(f).

1.03 APPLICABLE REQUIREMENTS, GUIDELINES, AND STANDARDS

A. The Contractor shall be responsible for the development and implementation of a CHSP specific to the scope of work consistent with, but not limited to, the requirements outlined below and the HSP. In the case that these requirements are conflicting, the one which offers the greatest degree of protection shall be followed.

1. Occupational Safety and Health Administration (OSHA) General Industry Standards found at 29 CFR 1910. The Contractor is made especially aware of the requirements found at 29 CFR 1910.120. Additionally, the requirements found at 29 CFR 1910.1200 (Hazard Communication) shall be applied to this project regardless of judicial status. A written Hazard Communication Program meeting these requirements shall be included in the CHSP.

2. OSHA Construction Industry Standards found at Title 29 Code of Federal Regulations, Part 1926.

3. National Fire Protection Association (NFPA), Flammable and Combustible Liquids Code, NFPA 30, 1984.

4. United States Environmental Protection Agency (U.S. EPA), Standard Operating Safety Guidelines, 1984.

5. U.S. Department of Health and Human Services (USDHHS), National Institute of Occupational Safety and Health (NIOSH), "Manual of Analytical Methods," 3rd Edition.

6. American National Standards Institute (ANSI), Practice of Respiratory Protection, Z88.2.

7. ANSI, Protective Footwear, Z358.1 (1981).

8. ANSI, Physical Qualifications for Respirator Use, Z88.6, 1984.

9. ANSI, Practice for Occupational and Educational Eye and Face Protection, Z87.1.

10. U.S. EPA, Office of Occupational Health and Safety, "Guidelines for the Selection of Chemical Protective Clothing, 3rd Edition, February 1987.

11. NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, USDHHS/PHS/CDC/ NIOSH.

12. NIOSH Pocket Guide to Chemical Hazards, USDHHS/PHS/CDC/NIOSH, June, 1990.

13. U.S. EPA, Health and Safety Requirements for Personnel Engaged in Field Activities, U.S. EPA Order No. 1440.2.

14. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices, current edition.

1.04 SUBMITTALS

A. The HSO shall prepare and submit the CHSP, as specified herein, in accordance with Section 01300 - SUBMITTALS.

B. The Contractor shall submit to the Engineer, for approval, equipment lists for all air sampling and monitoring equipment, and meteorological equipment. The Contractor shall also submit a Site Layout Drawing showing the proposed locations of the perimeter air sampling stations.

C. Daily Safety Logs shall be maintained by the SSO and submitted to the Engineer on a daily basis. The logs shall include items specified in Part 1.21.B of this Section.

D. Training Logs shall be maintained by the SSO and submitted to the Engineer on request throughout the project and at completion of the work. The logs shall include items specified in Part 1.21.C of this Section. Training and recordkeeping shall be in accordance with OSHA requirements in 29 CFR 1910.120.

E. Air Monitoring Results Reports shall be maintained by the SSO and submitted to the Engineer on a daily basis. These reports shall include items specified in Part 1.21.D of this Section.

F. Weekly Safety Reports shall be prepared by the SSO and submitted weekly to the Engineer. The reports shall include items specified in Part 1.21.E of this Section.

G. A Close-Out Safety Report shall be submitted by the HSO on completion of the work. This report shall include items specified in Part 1.21.F of this Section.

H. The Contractor shall submit the name, qualifications, and summary of experience of the Examining Physician with the Contractor's Bid as found in Part 1.11 of this Section.

I. The HSO shall submit evidence of successful completion of initial medical monitoring requirements to the Engineer for all site personnel prior to allowing these employees onsite.

J. The HSO shall submit evidence of successful completion of annual and/or termination medical monitoring requirements to the Engineer prior to allowing employees to continue/terminate employment on the project as required by 29 CFR 1910.120.

K. The SSO shall submit accident reports to the Engineer within 24 hours of occurrence, as specified in Part 1.21.G of this Section.

L. Air monitoring/sampling equipment calibration/maintenance records shall be maintained by the SSO in accordance with the CHSM and HSP. These records shall be submitted to the Engineer on request and/or at the completion of the project.

1.05 GENERAL REQUIREMENTS FOR CHSP PREPARATION AND IMPLEMENTATION

A. Use of the Site prior to approval of the CHSP will be restricted to mobilization within the support zone. No personnel may enter the exclusion zone until formal approval of the CHSP by the Engineer.

B. The CHSP shall meet all the requirements of 29 CFR 1910.120 and shall be prepared in accordance with, but not limited to, the requirements outlined in Part 1.03.A of this Section.

C. Should any unforeseen safety-related hazard become evident during the performance of the work, the SSO shall bring such hazard to the attention of the Engineer, both verbally and in writing, for resolution as soon as possible. In the interim, the Contractor shall take necessary action to re-establish and maintain safe working conditions to safeguard onsite personnel, visitors, the public, and the environment.

D. Should the Contractor seek modification of any portion or provision of the CHSP, such modification shall be requested by the HSO in writing to the Engineer, and if approved, be authorized in writing.

E. Disregard for the provisions of these Health and Safety Specifications shall be deemed just and sufficient cause for ordering the stopping of all work beyond the support zone until the matter has been rectified to the satisfaction of the Engineer. Any personnel found to be disregarding any provision of the HSP and/or CHSP shall be subject to immediate removal from further site work.

F. Temporary facilities or special construction procedures required to construct the support zone and contamination reduction zone shall be the responsibility of the Contractor and shall be detailed in the CHSP.

1.06 SITE ORGANIZATION AND KEY PERSONNEL

A. The CHSP must identify key personnel and alternates responsible for site safety and health. An organizational chart that includes all subcontractors and reflects the structure of reporting/responsibility shall be included. The organizational chart shall be supplemented by a narrative description.

1.07 SITE DESCRIPTION

A. The CHSP shall include an introduction stating the main project features, which shall include a review of:

1. Site history.

2. Site processes.

3. Previous worker/public complaints.

4. Site enforcement/litigation activities.

1.08 SITE CHARACTERIZATION AND ANALYSIS

A. The CHSP shall include a site characterization that meets the requirements of 29 CFR 1910.120(c). The Contractor must include, but is not limited to, the following items:

1. Location and approximate size of the Site.

2. Description of the tasks to be performed.

3. A safety and health risk of each task identified.

4. Duration of each planned task.

5. Site topography.

6. Site accessibility by air and road.

7. Pathways for hazardous substance dispersion.

8. Present status and capabilities of emergency response teams in the area.

9. Listing of all known or suspected hazardous substances involved with each task and their chemical, physical, and toxicological properties.

10. Risks associated with hazardous substances including, but not limited to, the following:

    a. Threshold Limit Values.

    b. Permissible Exposure Limits.

    c. Recommended Exposure Limits

    d. IDLH concentrations.

    e. Skin absorption and irritation potential.

    f. Eye irritation potential.

    g. Explosion and flammability potential.

1.09 PERSONAL PROTECTIVE EQUIPMENT

A. The Contractor will provide personal protective equipment to his site employees. All protective clothing and safety equipment shall be used, selected, stored, and maintained properly.

B. The various levels of protection used on the project shall be utilized, at a minimum, in accordance with the HSP.

C. The HSO shall determine the appropriate level of PPE for each task involved in the project as a result of initial site survey, review of existing data, and continuing monitoring.

D. The HSO shall establish action levels to be followed by the SSO in determining upgrade/downgrade from the level of protection specified for each task in the CHSP. These action levels shall be based upon air monitoring/sampling results and the potential for direct contact with contaminated materials. The action levels shall be fully described in the CHSP along with the formal process to be followed by the Contractor to submit level of protection changes to the Engineer for approval.

1.10 PERSONAL AND PERIMETER AIR MONITORING/SAMPLING

A. The HSO shall implement and oversee a personal and perimeter air monitoring/sampling program in accordance with the Air Monitoring Plan.

1.11 MEDICAL MONITORING

A. The HSO, in conjunction with the Examining Physician, shall detail the medical monitoring program in the CHSP. The program shall, at a minimum, outline the requirements specified below.

1. The Examining Physician shall be utilized to determine the appropriate biological testing parameters, conduct the examinations, review the analytical data, and approve site employees for work onsite.

2. All onsite employees must successfully complete an initial physical examination prior to being approved for site work unless the individual participates in a regular medical monitoring program which meets the requirements of 29 CFR 1910.120. Employees shall not perform any work involving hazardous materials between the time of their initial examination and commencement of work on the project. A completed Medical Approval Form, signed by the examining physician, must be submitted to the Engineer prior to the employee performing work in the exclusion zone or handling hazardous materials.

3. A termination examination shall be provided for each employee upon completion of site assignment unless the individual participates in a regular medical monitoring program. This examination shall be performed prior to the employee performing work on another assignment, or within 10 days after reassignment/termination, whichever is sooner. The Contractor will be responsible for ensuring that site employees are available for re-examination in the event of abnormal test results or requirements of re-examination by the Occupational Physician.

4. Periodic examinations of all onsite employees shall be performed in accordance with the requirements stipulated in the CHSP at least annually. A completed Medical Approval Form must be submitted following this examination prior to re-approving the employee for site work.

5. The Medical Monitoring Program shall describe the circumstances under which non-scheduled medical examinations will be conducted. At a minimum, the following circumstances shall be included:

   a. After acute exposure to toxic or hazardous material.

   b. At the discretion of the HSO, Occupational Physician, or the Engineer when a site employee has been exposed to high levels of hazardous materials.

   c. Upon the request of an employee showing demonstrated symptoms of exposure to hazardous materials.

6. The parameters indicated in the HSP shall be included in the medical monitoring program at a minimum. The actual parameters selected shall be the responsibility of the Examining Physician and shall meet the requirements of U.S. EPA, 29 CFR 1910.134, 1910.120, and ANSI Z88.2.

7. The Contractor shall maintain all medical surveillance records and make these records available to the Engineer or other regulatory agencies upon request by appropriate officials following all rules of confidentiality prescribed under 29 CFR 1910.120. These records shall be maintained for a period of 30 years.

8. Any employee who develops a lost-time injury or illness during the period of the contract must be evaluated by the Examining Physician. The employee's supervisor shall be provided with a written statement indicating the employee's fitness (ability to return to work), signed by the Examining Physician, prior to allowing the employee to re-enter the work site. A copy of this written statement shall be submitted to the Engineer. An Accident Report describing the events leading up to and causing the injury or illness shall be submitted to the Engineer.

1.12 SITE CONTROL

A. To control the spread of contamination and the flow of personnel and materials into and out of the work area, the Contractor shall establish a site control section in the CHSP. This section shall describe the methodology to be used by the SSO in determining the modification of work zone designations, procedures to limit the spread of contamination, and general limitations to be observed by site personnel.

B. Support Zone:

1. The support zone shall be established on the Site and is defined as the area outside the zone of significant contamination. The support zone shall be clearly delineated and shall be secured against active or passive contamination from the work site. The function of the support zone is to provide:

   a. An entry area for personnel, material, and equipment into the exclusion zone of site operations.

   b. An exit area for decontaminated personnel, materials, and equipment from the contamination reduction zone of site operations.

   c. Location for support facilities.

   d. A storage area for clean safety and work equipment.

C. No vehicles or equipment used in the exclusion zone shall be permitted to enter the support zone until fully decontaminated.

D. No vehicles or equipment used for personal reasons (supervisor's vehicles, personal tools, etc.) shall be permitted to enter the contamination reduction zone or exclusion zone.

E. The Site Control section of the CHSP shall fully describe onsite traffic flow and personnel access to work area procedures.

1.13 TRAINING AND INFORMATION

A. The Contractor shall provide all training and information, as required by 29 CFR 1910.120, to site employees. Proof of training, as required by this paragraph, shall be provided to the Engineer prior to permitting any employee to engage in site activities.

B. All site workers must successfully complete 40 hours of basic hazardous waste training and 24 hours of "on-the-job" training as required by 29 CFR 1910.120. Additionally, all supervisors must complete an additional 8 hours of training as required by 29 CFR 1910.120. The training described above is considered to be a qualification for work, and proof of compliance shall be required prior to site assignment.

C. Site-specific training for all Contractor employees shall be provided by the Contractor. No individual shall be permitted to enter the exclusion zone without completing this training.

D. The site-specific training program shall be developed and initially presented by the HSO. Subsequent presentations may be made by the SSO under the direction of the HSO. The training program shall be of sufficient time to allow each employee in the class to gain "hands-on" familiarity with site safety equipment and to understand site working procedures.

E. The Contractor shall supply the Engineer with a list of all employees successfully completing the site-specific training program. The SSO shall maintain the original copies of all questionnaires until requested by the Engineer or until project completion.

F. The SSO shall conduct daily safety meetings with onsite employees. Opportunity shall be provided for employees to voice safety-related concerns. The SSO shall submit to the Engineer a synopsis of each meeting including topics covered, safety-related concerns, action items to be addressed, status of previous items, and a signed attendance list. The list shall be posted daily in the SSO office.

1.14 ENGINEERING CONTROLS AND WORK PRACTICES

A. The CHSP shall address the engineering controls and safe work practices to be implemented for the work covered by these Specifications. These shall include, but not be limited to, the following:

1. Protocols for the use of shoring, safety belts, and fire safety equipment.

2. Requirements for entry into a confined space including monitoring of air quality (oxygen deficiency, flammability, and toxicity); determination of required levels of protection; checks of structural integrity; lists of emergency equipment and rescue procedures; and details of the "buddy system." A formal confined space entry permit shall be developed and utilized which includes the approval of the Engineer.

3. Safety requirements in accordance with 29 CFR 1910.120 for opening and sampling drums including remote and manual opening methods, criteria for determining when each method shall be used, and methods for drum handling.

4. Protocols for loading and operating trucks onsite including Department of Transportation (DOT) requirements covering such items as grounding, placarding, driver qualifications, and the use of wheel chocks.

5. Protocols for operation of heavy construction equipment in accordance with 29 CFR 1926.

6. Safety protocols for the demolition of tanks, process equipment and piping, and structures.

7. Protocols for working around heavy equipment.

8. Provision for protection of electrical systems. Safety standards shall be incorporated in electrical systems in accordance with OSHA regulation 29 CFR 1910.137 and 29 CFR 1926.400. All installations shall comply with the National Electrical Safety Code (NESC) and National Electrical Code (NEC).

9. Descriptions of safety inspection and preventive maintenance requirements for the operation of machinery or mechanized equipment, including written inspection reports.

10. Flame cutting and welding operations may be performed within the project site perimeter only with the prior approval of the Engineer. Elsewhere, such operations shall be in compliance with those specified in OSHA regulation 29 CFR 1910.252, Welding, Cutting, and Brazing. Formal Hot Work permits shall be issued for this purpose. Additionally, the use of explosives will not be permitted in any part of the Contractor work area.

11. Provisions for traffic safety, which must include appropriate clearances and protection for piping in areas of vehicle and pedestrian traffic and necessary markings locating pipe crossings in traffic and construction areas. Additionally, site access roads shall be constructed and maintained to accommodate the safe movement of equipment and vehicles. Gravel coverage on access roads shall be maintained to ease vehicle and equipment movement.

12. Provisions for documenting site employee daily activities. As part of these provisions the HSO shall develop a daily work permit system to be implemented by the SSO. Under this system the SSO will be required to issue permits to all task/job supervisors covering specific activities for the day. Included on the permits will be the following information:

    a. Names of all employees performing the task.

    b. Specific PPE requirements for the task.

    c. A description of the task being performed.

d. Date(s) for which the permit is applicable.

e. Signature of SSO and Supervisor.

f. Specific work instructions such as monitoring equipment required, safety inspections required, safety equipment necessary, fire watch, etc.

13. These permits shall be available at each work site and shall be explained to each worker by the supervisor in charge of each task.

14. A copy of each permit shall be maintained by the SSO as part of the project records. The SSO shall provide these completed permits to the Engineer on a weekly basis.

15. Protocols for purging, blanking, cleaning, cutting, and disassembling tanks, process equipment, piping, and other equipment that contains or has contained flammable or combustible materials. The protocol must include all procedures to be followed to ensure that the tank, piping, and equipment is cleared for dismantling/demolition.

16. Protocols and procedures for all lifting operations that involve loads of more than 2,000 pounds.

1.15 PERSONNEL DECONTAMINATION AND PERSONAL HYGIENE

A. Onsite personnel performing or supervising work within the Contamination reduction or exclusion zones or exposed to hazardous chemical vapors, liquids, or contaminated solids shall adhere to the requirements of this section.

B. The CHSP shall describe, in detail, the personnel decontamination protocols to be followed on this project. Additionally, the location(s) of personnel decontamination stations shall be shown on the site facilities drawing.

C. Used disposable PPE shall not be reused and shall be placed inside designated disposal containers provided for that purpose in the contamination reduction zone.

D. Disposable work clothing and waste materials shall be disposed of as solid hazardous waste.

E. Appropriate decontamination facilities and procedures shall be maintained and utilized for nondisposable protective equipment.

F. Except for attire worn only outside the exclusion zone or contamination reduction zone, no personal work clothes, shoes, or boots shall be worn or carried beyond the support zone. Soiled work clothes (excluding socks and undergarments) shall be laundered by the Contractor. Other nondisposable equipment such as boots, gloves, and respirators shall be washed down in the contamination reduction zone prior to entering the support zone.

G. The Contractor shall supply the following support zone facilities for use by onsite personnel:

1. Shower Facility: This facility shall include a minimum of one metal locker capable of accepting a padlock for security for each onsite personnel, a shower room or stalls with a minimum of one shower head for every five site workers, a floor drain from the shower room and/or stalls connected to a wastewater collection system, a minimum of two hand basins, two separate entrances (one from the contamination reduction zone side of the facility and one from the support zone side of the facility), and sufficient benches for seating all onsite personnel.

2. The lockers described in Part 1.15.G.1 above are only to be used to store street clothes and valuables. No personal protective equipment and/or work clothes are to be stored in these lockers.

3. The shower facility shall be kept in a clean condition on a daily basis by the Contractor. Additionally, the shower room or stalls shall be cleaned with detergent and disinfected, at a minimum, on a weekly basis.

4. The Contractor shall supply soap, towels, and wash clothes for all onsite personnel. These supplies shall be replenished and/or laundered on a daily basis.

5. Laundry: All outer clothing (i.e., coveralls or shirt and pants) shall be laundered onsite or the work subcontracted to a laundering service approved by the Engineer. If an offsite laundry is utilized, it shall be notified in writing of the potential hazardous contaminants on clothing so that appropriate precautions can be taken in handling and laundering on a daily basis. Clothing shall be washed using laundry detergent or soap. Laundry service shall provide for the daily pickup of outer work clothing for all onsite personnel. All clothing must be laundered and ready for use within 24 hours of pickup or supply sufficient changes of clean clothing until laundered clothing is returned.

6. Lunchroom: The lunchroom shall be constructed and equipped in accordance with Section 01500 - TEMPORARY FACILITIES. This facility shall be cleaned on a daily basis. A floor drain is optional.

7. Smoking Area: A smoking area shall be set aside outside of the lunchroom.

1.16 EQUIPMENT DECONTAMINATION

A. The CHSP shall describe, in detail, the protocols established for equipment decontamination.

1.17 GENERAL SITE RULES

A. The HSO shall develop a list of general site rules based on the requirements of these specifications and the CHSP. These rules, in addition to being included in the CHSP, shall be posted in all site facilities and at the entrance to the contamination reduction zone.

1.18 EMERGENCY AND FIRST-AID REQUIREMENTS

A. The CHSP shall describe the emergency and first-aid protocols to be utilized during work on the project. The following items must be included and discussed, at a minimum.

1. Emergency medical care services shall be arranged at a nearby medical facility and emergency routes established prior to any work onsite. The staff at the facility shall be advised of potential medical emergencies including the possibility of contamination of skin and clothing by specific chemicals from the Site. Procedures and facilities for emergency communications with health and emergency services shall be established.

2. Site support vehicles designated for use in the transportation of injured or ill personnel shall be provided with a route map to the medical facility(ies). At all times at least two onsite employees shall be thoroughly familiar with the emergency routes to the medical facility(ies).

3. At least two persons certified in First Aid and Cardio-Pulmonary Resuscitation (CPR) shall be on the Site during all site activities. These persons may perform other duties, but must be immediately available to render first aid when needed. Certification shall be by the American Red Cross or other approved agency.

4. Fire extinguishers with a minimum rating of 2A-10B:C shall be provided at all site facilities and at any other site locations where flammable or combustible materials present a fire risk. Each Contractor crew performing hot work (flame cutting) shall carry a fire extinguisher as rated above. Each fire extinguisher location shall be marked in red using readily visible signs with the words "Fire Extinguisher."

5. Emergency deluge showers and eyewash stations shall be provided for immediate use and shall be protected from contamination in areas where activities involve handling of materials that may be hazardous to the eyes or other exposed portions of the body.

6. Two Self-Contained Breathing Apparatus shall be dedicated for emergency use only and maintained onsite in the contamination reduction zone. All onsite employees shall be informed of their location.

1.19 HANDLING DRUMS AND CONTAINERS

A. The HSO shall describe the methods to be followed during the handling of all drums and containers found onsite. The methods developed and described in the CHSP shall meet, at a minimum, the requirements set forth at 29 CFR 1910.120(j).

1.20 CONTINGENCY AND EMERGENCY RESPONSE

A. The Contractor shall develop a Contingency and Emergency Response Plan as specified in 29 CFR 1910.120(l) to be included in the CHSP. This plan shall be capable of being a "stand-alone" document.

B. Emergency Communication:

1. The Contractor shall establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes, and emergency communications arrangement shall be posted at all project telephones.

C. Emergency Reporting:

1. In the event that an accident or some other incident such as an explosion, a theft of any hazardous material, or an exposure to toxic chemical occurs during the course of the project, the Engineer shall be telephoned immediately and receive a written notification within 24 hours. The report shall include the following items:

a. Name, organization, telephone number, and location of the Contractor.

b. Name and title of the person(s) reporting.

c. Location of accident/incident, i.e., site location, facility name.

d. Date and time of accident/incident.

e. Brief summary of accident/incident giving pertinent details including type of operation ongoing at time of accident.

f. Cause of accident/incident, if known.

g. Casualties (fatalities, disabling injuries).

h. Details of any existing chemical hazard or contamination.

i. Estimated property damage, if applicable.

j. Nature of damage; effect on contract schedule.

k. Action taken by Contractor to ensure safety and security.

l. Other damage or injuries sustained (public or private).

D. Contingency Planning:

1. Procedures and Contractor personnel responsibilities for potential emergencies shall be identified in the CHSP. Emphasis in the contingency planning section shall be placed on procedures. Contingency planning shall also include situations that will involve mobilization of the surrounding community. A meeting with the local emergency preparedness agency shall be scheduled by the Contractor to discuss the contingency measures to be followed in the event of a major emergency that may affect offsite areas. The HSO will be required to attend this meeting. It shall be the responsibility of the Contractor to prepare an agenda and chair this meeting. This agenda shall be sent to all participating parties prior to the scheduled meeting. At this meeting, the suggested guidelines and requirements shall be presented for protecting local residents in the event of major fires and explosions and the offsite migration of chemicals. An attempt shall be made to confirm contingency procedures by consensus agreement of the attending parties. Elements of the discussion shall include:

a. Names, responsibilities, and authority of personnel assigned to implement emergency actions and the contingency plan.

b. Procedures for detecting and quantifying airborne chemicals that may migrate offsite in addition to air monitoring.

c. Site security in the event of an emergency.

d. Recordkeeping and reporting requirements.

e. Criteria for initiating the community contingency plan.

f. Discussion of the Emergency Response Procedures contained in the CHSP.

2. The conclusions to the meeting discussion shall be formally documented and appended to the CHSP (e.g., letters confirming agreements or detailed meeting notes).

1.21 LOGS, REPORTS, AND RECORDKEEPING

A. The SSO shall maintain logs and reports covering the implementation of the HSP and CHSP. These shall include, but not be limited to: Daily Safety Logs, Training Logs, Air Monitoring Results Reports, Weekly Safety Reports, Close-Out Safety Reports, Accident Reports, Calibration/Maintenance Records, and Medical Approval Forms. These logs and records will be considered the ECC Trust property. The original of the logs and records shall be submitted to the Engineer and a copy maintained by the Contractor.

B. Daily Safety Logs shall be completed by the SSO and submitted to the Engineer daily. The format for the logs shall be shown in the CHSP and include the following minimum information:

1. Date.

2. Project name.

3. Work area(s) checked.

4. Employees present in work area(s).

5. PPE in use.

6. Monitoring equipment in use.

7. Accidents.

8. Breach of procedures.

9. Description of air samples and/or monitoring results.

10. Signature of preparer.

C. Training Logs shall be completed by the SSO and submitted to the Engineer upon request or at the completion of the work. These logs shall include the following information and the format shown in the CHSP:

1. Date.

2. Project name.

3. Employees in attendance and signature.

4. Name of employee's company.

5. Visitors in attendance.

6. Description of training activity and/or topics covered.

7. Equipment used.

8. Signature of instructor.

These logs shall be used to document all onsite training.

D. Air Monitoring Results Reports shall be completed by the SSO or IHT and submitted to the Engineer daily. These reports shall follow the format shown in the CHSP and include the following minimum information:

1. Date.

2. Project name.

3. Type of equipment used.

4. Equipment I.D. number.

5. Monitoring results for each work location with time of readings.

6. Analytical results for personal exposure or perimeter sampling.

7. Personnel or location monitored/sampled with description of activity being performed.

8. Sample numbers.

9. Miscellaneous information related to monitoring/sampling performed.

E. Weekly Safety Reports shall be completed by the SSO and submitted to the Engineer weekly. The format to be used for reporting shall be shown in the CHSP. The following information shall, at a minimum, be included:

1. Week ending date.

2. Project name.

3. Non-use or misuse of PPE, by work area and employee.

4. Misuse or non-use of appropriate engineering control methods by work area and employee.

5. Summary of job-related injuries and/or illnesses (attach reports).

6. Summary of Air Monitoring/Sampling Data and responses required.

7. Summary of meteorological data.

8. Total man-hours worked.

F. A Close-Out Safety Report shall be prepared and submitted to the Engineer within 10 working days following completion of the work. The following minimum information must be included:

1. Summary of the Weekly Safety Report which outlines the overall performance of Health and Safety by the Contractor.

2. Documentation of termination medical examinations for all site personnel.

3. Documentation showing that all Contractor vehicles and equipment have been decontaminated in compliance with the CHSP.

4. Summary of the procedures used to decontaminate all temporary site facilities.

5. Total man-hours worked.

6. Total lost work days.

7. Total OSHA recordable injuries/illnesses.

8. Description of any outstanding lost work day cases.

9. Description of any problems relating to medical surveillance including:

   a. Employees showing abnormal termination examination results.

   b. Employees required to be retested prior to final clearance.

   c. Any outstanding claims resulting from occupational injuries/illnesses.

G. Accident Reports shall be prepared by the SSO and submitted to the Engineer within 24 hours of occurrence. These reports shall detail all actions, conditions, and circumstances leading up to the accident. Additionally, the report must include the results of the investigation performed by the Contractor, which detail the specific cause(s) of the accident and procedures and/or controls to be implemented to ensure it does not recur. The specific form to be submitted shall be included in the CHSP.

H. A Calibration/Maintenance Record Form shall be maintained for all air monitoring and sampling equipment. Each form shall include, at a minimum, the following information:

1. Description of equipment.

2. Equipment I.D. number.

3. Date of calibration.

4. Specific calibration documentation.

5. Signature of personnel calibrating the equipment.

6. Description and date of onsite maintenance performed.

7. Signature of person performing maintenance.

These records will be maintained by the SSO and submitted to the Engineer upon request or at the end of the work. All calibration and maintenance shall be performed in accordance with the attached Quality Assurance Project Plan (QAPP). The format to be used for each type of air monitoring/sampling equipment shall be included in the CHSP.

PART 2 - PRODUCTS

2.01 The Contractor shall provide all labor, equipment, and materials necessary to implement the requirements of this section.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01391 - FIELD SAMPLING

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall be responsible for adhering to and implementing all requirements of the Field Sampling Plan attached to these Specifications.

B. The Field Sampling Plan details the sampling and analytical requirements associated with site preparation and material removal activities.

C. The Field Sampling Plan is Appendix A to the Quality Assurance Project Plan.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01392 - QUALITY ASSURANCE

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall be responsible for adhering to and implementing all requirements of the Quality Assurance Project Plan attached to these Specifications.

B. The Quality Assurance Project Plan ensures the quality of the site preparation and material removal sampling and analytical activities by employing quality assurance procedures in accordance with U.S. EPA protocols.

C. The objectives of the Quality Assurance Project Plan are as follows:

1. To assure sampling is carried out in accordance with established quality control procedures.

2. To assure that appropriate sampling and analytical procedures are followed as outlined in the Field Sampling Plan. The Field Sampling Plan is Appendix A to the Quality Assurance Project Plan.

1.02 SUBMITTALS

A. Laboratory Data.

B. Validated Data.

C. Field Measurement Logbook.

D. Sample Collection Data Logbook.

E. Chain-of-Custodies.

F. Quality Assurance Non-Conformances - Field.

G. Quality Assurance Non-Conformances - Laboratory.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01393 - CONSTRUCTION QUALITY ASSURANCE

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall be responsible for adhering to the requirements of the Construction Quality Assurance Plan attached to these Specifications.

B. The Construction Quality Assurance Plan ensures the quality of the site preparation and material removal construction activities.

C. The objectives of the Construction Quality Assurance Plan are as follows:

1. To establish quality assurance guidelines for all project operations.

2. To maintain quality control through standardized procedures, documentation, inspections, and reporting.

3. To establish the types of inspection and sampling activities and to provide required frequency.

4. To assure inspection and sampling are carried out in accordance with established quality control procedures.

1.02 SUBMITTALS

A. Construction Quality Assurance Manager's Reports.

1. Progress Reports.

2. Daily Quality Control Reports.

3. Corrective Actions Report.

4. Photographic Reporting Data Sheets.

5. Report of Field Changes.

6. Construction Manager Daily Reports.

7. Submittal Register.

8. Non-Compliance Notification.

9. Material Certifications with CQC Transmittal Form.

10. Final Certification of Completion.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01395 - ENVIRONMENTAL CONTROL AND MAINTENANCE

PART 1 - GENERAL

1.01 SUMMARY

A. This section covers the work required for the protection of the environment throughout the course of the project, except for those measures set forth in other sections of these Specifications. The Contractor shall adhere to the Environmental Control and Maintenance Plan attached to these Specifications.

B. Environmental protection shall be defined as the retention of the environment in its natural state, to the greatest extent possible, during the project implementation, and the enhancement of the natural appearance in its final condition.

C. Items to be considered under this section are air, water, and land resources and shall include noise, solid waste management, and management of other pollutants.

D. The Contractor shall be responsible for complying with all applicable Federal, state, and local laws concerning the prevention, abatement, and control of all environmental pollution arising from the project activities.

1.02 SUBMITTAL

A. Environmental Conditions Survey Report.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.01 PROTECTION OF LAND RESOURCES AND WETLANDS

A. The Contractor shall confine his project activities to the work areas shown on the Drawings.

B. The Contractor shall take all measures necessary to prevent tracking of mud and dirt onto adjacent public roadways. These measures shall include a gravel construction entrance. Adjacent public roadways shall be cleaned as often as necessary to maintain a dust and mud free surface.

C. The Contractor shall make every effort to minimize the impact of construction in wetlands. No stockpiling of excavated or backfill material will be permitted in wetland designated areas.

3.02 PROTECTION OF WATER RESOURCES

A. The Contractor shall implement special measures to prevent chemicals, fuels, oils, greases, excavated materials, and decontamination fluids from entering public waters.

B. The Contractor shall, at all times, perform work in a manner that minimizes the interference with or the disturbance to fish and wildlife.

3.03 BURNING

A. Under no circumstances shall the burning of debris or waste materials be conducted at the Site.

3.04 TEMPORARY CONTROLS

A. Noise Control:

The Contractor shall conduct his operations so as not to violate any applicable ordinances, regulations, rules, and laws. All construction machinery and vehicles shall be equipped with practical sound-muffling devices and operated in a manner to cause the least noise, consistent with efficient performance of the work. If necessary vehicle speeds will be lowered to reduce noise and dust, however, this will be done with no impact to the cost or schedule of the project.

B. Dust Control:

The Contractor shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water. Dusty materials in piles or in transit shall be covered to prevent blowing.

C. Water Control:

The Contractor shall provide for the drainage of stormwater and such water as may be applied or discharged on the Site in performance of the work. Drainage facilities shall be adequate to prevent damage to the work, the Site, and adjacent property.

D. Erosion Control:

1. The Contractor shall prevent erosion of soil on the Site and adjacent property resulting from his construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operations that will disturb the natural protection.

2. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation preserved to the greatest extent practicable.

3. Specific Erosion Control methods and products are listed in Section 02700 - EROSION CONTROL.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01396 - AIR MONITORING

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall be responsible for adhering to and implementing all requirements of the Air Monitoring Plan attached to these Specifications.

B. The Air Monitoring Plan includes procedures to detect and quantify offsite migration of air contaminants associated with site preparation and material removal activities.

1.02 SUBMITTALS

A. Air Monitoring Reports:

1. Phase I - Baseline.

2. Phase II - Site Preparation and Material Removal.

B. Analytical Results (Verbal and Written).

C. Sample Information Sheets.

D. Meteorological Data.

E. Calibration Records.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01397 - SITE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. The Site Management Plan (SMP) has been prepared to provide general guidelines for management of onsite facilities and operations during the site preparation and material removal activities. This plan provides information on the support zone layout and operations, site security, and emergency procedures. This plan will serve as the basis for the Contractor Site Management Plan which will be submitted by the Contractor prior to commencement of onsite activities.

1.02 SUBMITTALS

A. Contractor Site Management Plan

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01400 - CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall establish and maintain an effective quality control system in compliance with requirements indicated herein and elsewhere in the Contract documents.

1.02 DESCRIPTION

A. Contractor Quality Control (CQC) is a management system employed by the Contractor which assures that the construction complies with the requirements of the contract plans, specifications, and drawings. It includes a staff of personnel who represent the Contractor and who continually carry out a system of controls consisting of sampling, inspection, corrective measures and reporting, all toward the end of assuring the Contractor of construction in strict compliance with contract documents.

1.03 SUBMITTALS

A. The CQC Plan shall be submitted under the provisions of Section 01300 - SUBMITTALS.

1.04 CONTRACTOR QUALITY CONTROL PLAN

A. Formulation, Submissions, Details, and Acceptance of Plan:

1. The Contractor shall submit his proposed CQC Plan and progress schedule to the Engineer for approval at least 10 days prior to the Pre-Work Conference. The U.S. EPA and IDEM will also review the CQC Plan. The plan shall identify personnel, and establish procedures, instructions, records, and forms to be used. If the Contractor fails to submit an acceptable Contractor Quality Control Plan, the ECC Trust may refuse to allow construction to start. In that event the ECC Trust may withhold funds from progress payments until such time as an acceptable final plan is submitted.

2. Pre-Work Conference: Before start of construction, the Contractor will meet with the ECC Trust and their Engineer, U.S. EPA, and IDEM to discuss the Contractor Quality Control Plan, and to finalize the Contractor Quality Control Plan in accordance with Section 01210 - PRE-CONSTRUCTION AND PRE-WORK CONFERENCES. During the conference, details of the Quality Control Plan shall be reviewed, such as: forms for recording the Contractor Quality Control operations, control activities, testing, administration of the plan during progress of the Work, and interrelationship of the Contractor's inspections and control with the Engineer's inspections.

3. The Contractor Quality Control Plan shall include as a minimum, the following.

   a. A description of the Contractor's quality control organization, including a chart showing lines of authority, and acknowledgement that the Contractor's Quality Control staff shall conduct inspections for all aspects of the work specified, and shall report to the Project Manager or someone higher in the Contractor's organization.

   b. The name, qualifications, responsibilities, and authority of each person assigned to the Contractor's Quality Control organization.

   c. A copy of the letter to the Contractor's Quality Control Manager is signed by an authorized official of the firm, which describes the responsibility and delegates authority to the Contractor's Quality Control Manager.

   d. Procedures for scheduling and managing submittals, including those of subcontractors, fabricators, suppliers, and purchasing agents.

   e. Control procedures to be promulgated.

   f. Control testing procedures for each specific test, including field sampling in accordance with the attached Construction Quality Assurance Plan.

   g. Reporting procedures including proposed reporting formats.

4. Acceptance of Plan: Acceptance of the Contractor's plan by the Engineer, U.S. EPA and IDEM is required prior to the start of construction. Acceptance is conditional, and its continuation will depend on satisfactory performance by the Contractor during construction. The Engineer

reserves the right to require the Contractor to make changes in the Contractor Quality Control Plan and operations as necessary to obtain the quality specified, at no additional cost to the ECC Trust.

5. Notification of Changes: After acceptance of the Contractor Quality Control Plan, the Contractor will notify the Engineer in writing of any proposed change. The proposed changes will be subject to acceptance by the ECC Trust, U.S. EPA, and IDEM.

B. Quality Control Organization:

1. Contractor Quality Control Manager: Contractor will name an individual, within his organization, who will be responsible for overall management of the Contractor's Quality Control at the ECC Site, and who will have authority to act in the Contractor Quality Control matters for the Contractor. The Contractor Quality Control Manager shall be experienced in hazardous waste remediation and shall possess adequate formal academic training in engineering and/or chemistry and have sufficient practical technical and managerial experience to successfully oversee and implement construction quality assurance activities. His sole responsibility is to verify compliance with the contract plans, specifications, and drawings. This person shall demonstrate the ability to perform the duties required to the satisfaction of the Engineer. The CQC Manager or his designated representative shall be physically at the project site whenever work is in progress.

2. Personnel: Contractor will hire and maintain under direction of the Contractor Quality Control Manager a staff to perform all Contractor Quality Control activities. Personnel of this staff shall be qualified by experience and technical training to perform their assigned duties. Actual strength of the staff during any specific work period may vary to cover work needs.

C. Manufacturer's Contributions:

1. Manufacturer's Instructions:

a. The Contractor shall comply with manufacturer's instructions, including each step in sequence.

b. Should instructions conflict with the contract documents, request clarification from the Engineer before proceeding.

2. Manufacturer's Certificates:

   a. When required in an individual specification section, submit manufacturer's certificate, certifying that products meet or exceed specified requirements, executed by responsible officer.

3. Manufacturer's Field Services:

   a. When required in an individual specification section, manufacturer or qualified representative shall observe and correct field conditions, conditions of installation, quality of workmanship, start-up of equipment, testing, adjusting, and balancing of equipment as applicable, and make a written report of observations and recommendations to the Engineer.

   b. The qualified manufacturer's representative shall certify that the installation has been properly made.

4. Submittals:

   a. Submittals shall be specified in Section 01300 - SUBMITTALS. The Contractor Quality Control organization shall be responsible for certifying that all submittals are in conformance with Contract requirements.

D. Implementation of Quality Control Plan:

1. General:

   a. Comply with highest industry standards except when specified requirements indicate more rigid standards, or more precise workmanship is required.

   b. Provide personnel to produce work of specified quality.

   c. Secure, protect, and maintain products and work completed.

2. Preparatory Inspection: This shall be performed prior to beginning any segment of work. It shall include a review of Contract requirements; a check to assure that all materials and/or equipment are on hand, and have been tested; samples submitted and approved; a check to assure that provisions have been made to do required control testing; examination of the work area to ascertain that all preliminary work has been completed, and a physical examination of materials and equipment and sample work

to assure that they conform to submittal data. The Engineer, U.S. EPA, and IDEM shall be notified at least 24 hours in advance of the preparatory inspection and prior to commencement of work. The Contractor will instruct each contributing worker as to the acceptable level of workmanship required in the Contractor Quality Control Plan in order to meet specifications.

3. Initial Inspection: This shall be performed as soon as a representative portion of the particular segment of work has been accomplished, and shall include examination of the quality of workmanship and materials, a review of control testing for compliance with Contract requirements, and inspection for omissions and dimensional requirements. The Engineer, U.S. EPA, and IDEM shall be notified at least 24 hours in advance of the initial inspection, and such inspection shall be made a matter of record in the Contractor Quality Control documentation.

4. Follow-up Inspections: These shall be performed regularly to assure continuing compliance with Contract requirements, including control testing, until substantial completion of the particular segment of work. Such inspection shall be made a matter of record in the Contractor Quality Control documentation. Final follow-up inspections shall be conducted and deficiencies corrected prior to final acceptance of segments of work.

5. Tests: A list of tests, and the frequency of their performance, which the Contractor understands he is to perform, and on which he is to submit reports shall include, but is not necessarily limited to, the following:

   a. Visual inspections.

   b. Concrete tests.

   c. Offsite testing laboratories.

6. Contractor will submit the list (Paragraph 1.04.D.5 above) of tests, and the frequency of their performance, as a part of the Contractor's Quality Control Plan, to the Engineer. The list shall give the test name, Specification Paragraph containing the test requirements, and the personnel and/or laboratory responsible for each type of test. The Contractor will perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms, including all of the test documentation requirements, have been prepared.

7. Testing for Laboratory Capability:

a. Capability Check: The Engineer will have the right to check laboratory equipment in proposed laboratories for compliance with the standards set forth in Section 01410 - TESTING LABORATORY SERVICES and to check laboratory testing procedures and techniques.

b. Capability Rechecks: If the selected laboratory(ies) fails the capability check, the Contractor will be assessed actual costs to reimburse the ECC Trust for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs shall be deducted from amount due the Contractor under this Contract.

c. The Engineer, U.S. EPA, and IDEM use of Project Laboratories: The Engineer, U.S. EPA and IDEM shall have the right to utilize the Contractor's control testing laboratory(ies) and equipment to make quality assurance tests and to check the Contractor's testing procedures, techniques, and test results, at no additional cost to the ECC Trust.

8. Completion Inspection:

a. Upon substantial completion of all work or any segment thereof as referenced in the contract documents, the Contractor Quality Control Manager shall conduct a completion inspection of the work and develop a "punch list" of items which do not conform to the approved Contract Documents. Such a list shall be included in the Contractor Quality Control documentation and shall include the estimated date by which the deficiencies will be corrected. The Contractor Quality Control Manager or his staff shall make a second completion inspection to ascertain that all deficiencies have been corrected, and so notify the Engineer. The completion

inspection and any deficiency corrections required by this paragraph shall be accomplished within the time stated for completion of the entire work, or any particular segment thereof if the work is divided into segments with separate completion dates.

9. Documentation:

   a. The Contractor will maintain current records of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form and shall indicate a description of the trades working on the projects, the number of personnel working, weather conditions encountered, and delays encountered, and acknowledgement of deficiencies noted along with corrective actions taken on current or previous deficiencies. Additionally, these records shall include evidence that required activities or tests have been performed, including but not limited to the following:

      (1) Type and number of control activities and tests performed.

      (2) Results of control activities or tests, including nature of any defects, causes for rejection, and other information related to deficient features.

      (3) Proposed remedies and accomplished corrections.

   b. These records shall cover both conforming and defective features, and shall include a statement that supplies and materials incorporated in the work comply with contract requirements. Legible copies of these records shall be submitted to the Engineer.

10. Notification of Noncompliance:

   a. The Engineer will notify the Contractor, ECC Trust, IDEM, and the U.S. EPA project coordinator or its designated representative of any observed noncompliance with requirements of this section by the Contractor. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time, or for extra compensation costs or damages by the Contractor.

1.05 REVIEW

A. The Engineer will review the Contractor Quality Control Plan and provide comments before the Pre-Work Conference.

B. The Contractor will make appropriate revisions and resubmit the Contractor Quality Control Plan within 7 days after the Pre-Work Conference.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01410 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes requirements for the Contractor provided testing laboratory services.

1.02 QUALITY ASSURANCE

A. The Concrete Testing Laboratory shall be selected on the basis of ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

B. The Chemical Testing Laboratory shall be selected on the basis of similar criteria for assurance of responsible and dependable sampling, testing, detecting, and identification of hazardous pollutants in air, water, soil, and other materials.

C. Laboratories shall have been inspected within preceding 1-year period by representatives of the National Bureau of Standards (or other outside agency exercising comparable certification authority over testing laboratories). Certification of such inspections shall include statements of the calibration accuracy of all major items of testing equipment that will be utilized to assist in the control of construction operations for this project.

D. Laboratories shall be authorized and certified for operation by the U.S. EPA and IDEM, and each shall maintain a Registered Professional Engineer responsible for direction and review of its services.

E. The U.S. EPA and the Engineer can inspect any laboratory utilized by the Contractor for the work. The U.S. EPA and the Engineer reserve the right to require the Contractor to correct any laboratory quality assurance deficiencies at no additional cost to the ECC Trust. The Contractor will submit to the U.S. EPA and the Engineer, documentation of remedies implemented to correct deficiencies.

F. All laboratories utilized must demonstrate a current and successful QA/QC program.

1.03 SUBMITTALS

A. Submit under provisions of Section 01300 - SUBMITTALS.

B. For each laboratory selected, and prior to beginning work on the project, the Contractor shall submit to the Engineer:

1. Name, address, and telephone number of laboratory, and name(s) and qualifications of full-time Registered Professional Engineer(s) and Responsible Officer for laboratory(ies).

2. Copy of most recent report of laboratory facilities inspection, together with memorandum of remedies of deficiencies reported by the inspection, if any.

3. Laboratory certification(s).

4. Statement designing which tests are to be performed, a schedule of approximate times and frequencies for each type of sampling/testing.

C. Laboratory Reports

1. After each inspection and test, the laboratory shall submit reports within 1 week. Four copies shall be provided to the Engineer, and as many copies to the Contractor as he requires.

2. Reports shall include: date, project title and number, name of inspector, date and time of sampling or inspection, identification of product and section of Specifications, location in the project, type of test or inspection, results of test, and conformance or nonconformance with Specification.

3. Within 30 days of the completion of the project, the laboratory shall submit a Final Summary Report. Four copies shall be provided to the Engineer, and as many copies to the Contractor as he requires.

4. Final Summary Report shall include all of the reports which were submitted during the project.

1.04 CONTRACTOR RESPONSIBILITIES

A. Screen, select, and engage testing laboratories in accordance with Paragraph 1.2 - Quality Assurance, in this section.

B. Notify the Engineer and laboratory 24 hours prior to expected time for operations requiring inspection and testing services. Provide Regulatory Agencies 7 days advance notice of any sample collection activities; however, if 7 days notice is not practical under the circumstances; provide reasonable notice of the sampling activity.

C. Provide access to work to be inspected/tested, and furnish equipment and incidental labor to assist in obtaining, and in handling, transporting, and storing samples.

D. Coordinate laboratory sampling and testing with progress of the project, and insure compliance with the approved CQC Plan and Contract Documents.

E. Deliver to laboratory adequate quantities of samples of materials proposed to be used, which require testing.

F. Contractor-selected testing laboratories and facilities must be acceptable to the Engineer. That acceptance will be conditional upon satisfactory performance. The Engineer reserves the right to require changes when deemed necessary to obtain the quality of inspection, testing, and reporting that have been selected in the QAPP, and to satisfy these Specifications.

G. Employment of independent testing laboratories will in no way relieve the Contractor of any responsibilities with regard to Testing Laboratory Services.

H. The Contractor shall comply with testing and sampling requirements of all other Contract Documents.

1.05 TESTING LABORATORY LIMITATIONS

A. Laboratories may not alter, revoke, or enlarge the requirements of Contract Documents.

B. Laboratories may not assume any duties of the Engineer or Contractor, such as:

1. Accept or reject any portion of the work.

2. Issue Stop Work orders.

3. Issue Resume Work authorization.

4. Authorize or require changes in work procedures.

1.06 LABORATORY RESPONSIBILITIES

A. Attend pre-construction and pre-work conferences, and progress meetings when appropriate or required by the Engineer or the Contractor.

B. Test samples submitted by the Contractor and prepare required reports.

C. Perform testing and reports in accordance with these Specifications, and standards of the industry.

D. Perform any additional testing or reports as may be required by the Engineer.

1.07 SCHEDULE OF TESTS AND INSPECTIONS

A. Approved CQC Plan and individual sections of Specifications shall determine types and frequencies of tests and inspections.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes requirements for providing, operating, and maintaining temporary facilities.

1. Facilities:

a. Engineer office trailer.

b. Two Contractor office trailers.

c. U.S. EPA/IDEM office trailer.

d. Employee break/lunch trailer.

e. Personnel decontamination trailer.

f. Guard house.

B. At the completion of the work, all temporary site facilities shall be removed from the Site.

1.02 OTHER REQUIREMENTS

A. The Contractor shall provide, as needed, separate facilities to accommodate male and female onsite personnel.

B. The Contractor shall maintain all facilities, equipment, and fixtures on a daily basis, and shall provide daily janitorial services. Maintenance shall extend beyond the structures to all parking areas and all exterior portions of the operations area.

C. Field offices shall be equipped as specified and shall be available at the Site for the Engineer's use prior to the commencement of any field work under the Contract. The field office shall be located in the support zone as shown on the Drawings or as directed by the Engineer.

PART 2 - PRODUCTS

2.01 OFFICE TRAILERS

A. The Contractor shall provide and maintain four office trailers (one for the U.S. EPA/IDEM, one for the Engineer, and two for the Contractor).

2.02 THE ENGINEER'S OFFICE TRAILER

A. The Contractor will provide and maintain a separate building for sole use of the Engineer, with a separate lockable entrance door. Three keys shall be provided.

B. The building shall have two offices with lockable doors, each office having a minimum of 100 square feet of floor area and a conference room with at least 200 square feet of floor area.

C. Offices shall be furnished as follows:

1. Desk with lockable drawers, chair, and table (60 inches x 30 inches).

2. Separate telephone line with telephone.

3. Four-drawer, fire resistant, lockable filing cabinet legal size.

4. Bookcase of three shelves 3 feet high x 12 inches deep x 3 feet long.

5. Waste basket.

D. Conference room shall be furnished as follows:

1. Photocopying machine equipped with automatic feed, with adequate supply of copy paper. Copy paper shall be replenished by the Contractor during the course of the Contract.

2. Office table (96 inches x 30 inches) and 12 chairs.

3. Telephone line with speaker telephone (common telephone line with office).

4. Plan rack.

5. Waste basket.

6. Facsimile (fax) machine.

E. The trailer shall be equipped with two-way radios.

2.03 CONTRACTOR OFFICE TRAILERS

A. The Contractor will provide and maintain two separate buildings for sole use by the Contractor and his Subcontractors, with separate lockable entrance doors. Three keys shall be provided for each building.

B. Each building shall have two offices with lockable doors, each office having a minimum of 100 square feet of floor area and a conference room with at least 400 square feet of floor area.

C. Offices shall be furnished as follows:

1. Desk with lockable drawers, chair, and table (60 inches x 30 inches).

2. Common telephone line with telephone.

3. Four-drawer, fire resistant, lockable filing cabinet legal size.

4. Bookcase of three shelves 3 feet high x 12 inches deep x 3 feet long.

5. Waste basket.

D. Conference room shall be furnished as follows:

1. Office table (96 inches x 30 inches) and 12 chairs.

2. Plan rack.

3. Waste basket.

E. The trailer shall be equipped with two-way radios.

F. The Contractor shall provide a minimum of four sets of personal protective health and safety field equipment for visitors and four sets of disposable clothing for the Engineer, ECC Trust, the U.S. EPA and IDEM on a daily basis in a readily accessible area.

2.04 U.S. EPA/IDEM OFFICE TRAILER

A. The Contractor will provide and maintain a separate building for sole use of the U.S. EPA and IDEM with a separate lockable entrance door. Three keys shall be provided for each building.

B. The building shall have two offices with lockable doors, each office having a minimum of 100 square feet of floor area.

C. Offices shall be furnished as follows:

1. Desk with lockable drawers, chair, and table (60 inches x 30 inches).

2. Common telephone line with telephone.

3. Four-drawer, fire resistant, lockable filing cabinet legal size.

4. Bookcase of three shelves 3 feet high x 12 inches deep x 3 feet long.

5. Waste basket.

D. The trailer shall be equipped with two-way radios.

2.05 EMPLOYEE BREAK/LUNCH TRAILER

A. The Contractor shall provide and maintain a separate building for sole use of Contractor and Subcontractors employees with separate lockable entrance door. Three keys shall be provided.

B. Trailer will have storage space for field supplies including hand tools, personal protective equipment, and field screening equipment.

C. The building shall have two storage rooms with lockable doors, each room having a minimum of 100 square feet of floor area and an employee break room with at least 200 square feet of floor area.

D. Storage rooms will be furnished with shelves.

E. Open area shall be furnished as follows:

1. Office table (96 inches x 30 inches) and 12 chairs.

2. Waste basket.

F. Personnel will be required to remove their contaminated clothing and to wash their hands and face before entering the lunch or break area.

2.06 PERSONNEL DECONTAMINATION TRAILER

A. The personnel decontamination facilities will be placed in the contamination reduction area and will consist of the following:

1. An enclosed dressing/undressing area equipped with storage racks, chairs, lockers, and separate facilities for male and female personnel including showers.

2. An area divided into stations for washing, removal, and disposal of personal protective gear. The stations will be set up into a logical sequence to reduce contamination being carried from each station.

B. The facility size will accommodate the largest number of employees expected onsite plus approximately four visitors.

C. Enclosed facilities will be provided with heating, ventilation, air conditioning, and proper lighting.

D. An emergency shower will be located on the outside of the facility. The shower shall be capable of operation year-round.

E. All water used in washing and decontamination will be disposed of in the wastewater storage tanker truck.

F. This trailer shall also include all requirements set forth in Section 01390, Part 1.15.G of these Specifications.

2.07 GUARD HOUSE

A. A separate building shall be provided for security and communications personnel, having a sufficient floor space. This area shall contain, as a minimum, the following equipment:

1. One office desk with lockable drawers and three office chairs.

2. One telephone having a circuit separate from all others onsite.

3. One office table measuring 3 feet x 8 feet.

4. One lockable, fire resistant, four-drawer filing cabinet.

5. A minimum of two windows providing visibility of the Site.

6. Two-way radios.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. The Contractor shall locate all temporary facilities at approved locations and properly anchor them to withstand all weather conditions.

B. The Contractor shall provide dumpsters for general site trash collection with call services that are adequate for the activities conducted onsite. This material may include paper products, plastics, food, packing materials, and any other non-hazardous solid wastes. This waste does not include any remedial action generated waste as defined in Section 02080 - REMEDIAL ACTION GENERATED WASTES.

3.02 REMOVAL OF TEMPORARY FACILITIES

A. The Contractor shall remove all temporary facilities upon completion of the project.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01510 - UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes requirements for providing, operating, and maintaining, all utilities associated with site preparation and material removal activities.

1. Utilities:

a. Telephone.

b. Electricity.

c. Clean water.

d. Sanitation.

B. Utilities shall be installed in such a way that they may be disconnected upon completion of this phase of the work, but easily reconnected for use in the future.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Electricity and lighting shall be in accordance with Federal, state, and local regulations as well as local utility company requirements. All work shall be in accordance with the National Electric Code.

B. Sanitary facilities, and disposal of sanitary wastes, shall be in accordance with state and local regulations. The Contractor shall dispose of sanitary waste offsite at his own expense.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe material suitable for use with potable water may be standard weight galvanized steel, sized for unimpeded maximum expected demand along each branch or run between laterals.

B. Valves shall be of appropriate type for the usage, shall be clean and in good operating condition, and shall be the same nominal size as pipe.

PART 3 - EXECUTION

3.01 TELEPHONE

A. The Contractor shall install service at time of site mobilization.

B. Installation shall consist of five line services to field offices for construction use: two private lines to the Engineer's office, one line to U.S. EPA/IDEM office, and one line each to both Contractor offices, in accordance with Section 01500 - TEMPORARY FACILITIES.

C. The Contractor will remove telephone service upon completion of the project.

3.02 ELECTRICITY

A. Install initial services at time of site mobilization. Public Service of Indiana (PSI) will provide power at the site boundary. PSI will provide everything up to and including the meters. (Power will be from two sources - three wire, 480 volt and single-phase, 120 volt, each with its own meter.) Cabinets will be provided; the Contractor shall install them.

B. The Contractor shall bring power to each required use. Currently, that includes the trailers (i.e., lights, heating/cooling, outlets, etc.), and transfer pump for clean water tank, transfer pump for wastewater, and site lighting. The Contractor shall modify and extend services as required to support work program.

C. All circuits through the construction site will be protected either by a ground fault interrupter or an approved grounding system.

D. The Contractor shall be responsible for providing continuous service, including the use of emergency generator power when service is interrupted during site work.

3.03 CLEAN WATER

A. The Contractor shall supply a quantity of clean water required for equipment and facility decontamination, safety and emergency response activities, and potable water needs. Size meter, valves, and piping to provide ample flow.

B. The Contractor shall install service at time of site mobilization.

C. The Contractor shall supply clean water by tank truck and pump. Tank will hold approximately 5,000 gallons and will be kept not less than 35 percent full.

D. The Contractor shall provide pump and piping from clean water tank to decontamination pad and other nonpotable uses.

E. The Contractor shall provide a drinking water source inside trailers for all site workers.

3.04 SANITATION

A. The Contractor shall provide facilities at time of site mobilization.

B. All toilets shall be in compliance with local and state regulations.

C. The Contractor shall provide services to collect and remove sanitary wastes from the Site in an appropriate manner on a regular schedule (weekly unless otherwise specified) and dispose of properly.

1. Clean areas of facilities daily and maintain in sanitary condition.

2. Provide toilet paper, paper towels, and soap in suitable dispensers.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01525 - PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers the requirements for project identification and project informational signs at the project site.

1.02 QUALITY ASSURANCE

A. Design sign and structure to withstand 50 miles/hour (80 km/hour) wind velocity.

B. Sign Painter: Experienced as a professional sign painter for a minimum 3 years.

C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.03 SUBMITTALS

A. Submit Drawings under provisions of Section 01300 - SUBMITTALS showing sign content, layout, lettering, and colors.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: New, wood, structurally adequate.

B. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch (19 mm) thick, standard large sizes to minimize joints.

C. Rough Hardware: Galvanized.

D. Paint and Primers: Exterior quality, two coats; sign background of white color.

E. Lettering: Exterior quality paint, contrasting colors as selected.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The Contractor shall install the project identification sign within 30 days after Notice to Proceed is given.

B. Erect at designated location.

C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.

D. Install sign surface plumb and level, with butt joints. Anchor securely.

E. Paint exposed surfaces of sign, supports, and framing.

3.02 PROJECT IDENTIFICATION SIGN

A. One painted sign, 48 square feet area, bottom 6 feet above ground.

B. Content:

1. Project number and title.

2. Names and titles of Authorities.

3. Name of title of Engineer and Consultants.

4. Name of Prime Contractor and major Subcontractors.

3.03 PROJECT INFORMATIONAL SIGNS

A. Paint informational signs of same colors and lettering as Project identification sign, or standard products; size lettering to provide legibility at 100 foot distance.

B. Provide informational signs at each field office and directional signs at the site entrance as well as onsite to direct traffic into and within the Site. Relocate as work progress requires.

3.04 MAINTENANCE

A. Maintain signs and supports clean. Repair deterioration and damage.

B. The signs shall become the property of the ECC Trust at the completion of the project.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01700 - PROJECT RECORD DOCUMENTS/CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall maintain accurate and comprehensive records of all site activities as well as all additions, substitution of materials, variations in work, and any other revisions to the Contract Documents. These records shall be kept in a neat and orderly manner.

1.02 SUBMITTALS

A. The Contractor shall deliver to the Engineer within 30 days of the completion of work, all Project Record Documents. Delivery shall be a condition of final payment.

B. The Project Record Documents shall include all items specified in Section 2.01 of this section.

C. The submittal shall be accompanied by a transmittal letter containing:

1. Date.

2. Project title and address.

3. Contractor's name and address.

4. Title and number of each record.

5. Certification that each document, as submitted, is complete and accurate.

6. Signature of the Contractor or his representative.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The Contractor shall maintain, at the job site, one copy of the following Project Record Documents:

1. As-built drawings showing all variations from the contract drawings.

2. Specifications.

3. Support Plans.

4. Addenda.

5. Change orders.

6. Other modifications to the Contract.

7. Contractor's daily progress or activity reports, including:

   a. Records of all site work.

   b. Daily payment quantities.

   c. Field testing results.

   d. Safety and accident incident reports.

8. Wage records as required for Federal and state funded projects.

9. Technical submittals and change orders.

10. Other items as required by the Contract Documents.

B. The Contractor shall provide safe, onsite storage for all Project Record Documents. This storage shall be available to the Engineer for inspection.

PART 3 - EXECUTION

3.01 RECORDING

A. The Contractor shall clearly label each document as "Project Record."

B. The Contractor shall keep all record documents current.

C. Specifications and Addenda shall be legibly marked up to record changes made by change or field orders, on other matters not originally specified.

D. The Contractor shall maintain an up-to-date chronological index of all project records for review by the Engineer.

E. All documents generated as part of the site preparation and material removal activities are the property of the ECC Trust and shall not be released by the Contractor to the public, news media, or anyone else without prior written permission of the Engineer after consultation with the ECC Trust.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01710 - DEMOBILIZATION

PART 1 - GENERAL

1.01 SUMMARY

A. This work shall consist of onsite activities performed by the Contractor subsequent to facility dismantling and disposal, but prior to project close-out.

B. Components of this work shall include, but not be limited to, removal of all temporary facilities, construction equipment, and materials; disconnection of utilities; and cleanup of this Site; with the exception of the following items which shall remain onsite:

1. Site security fence.

2. Equipment decontamination pad.

3. Wastewater storage pad.

PART 2 - PRODUCTS

A. The Contractor shall provide all labor, materials, and equipment required for the performance of the work.

PART 3 - EXECUTION

3.01 UTILITIES

A. The Contractor shall coordinate with local utilities and shall provide for the disconnection of all utility service. Service lines shall remain onsite.

3.02 TEMPORARY FACILITIES

A. The Contractor shall remove all temporary facilities in accordance with the provisions of Section 01500 - TEMPORARY FACILITIES.

3.03 CONSTRUCTION EQUIPMENT AND MATERIALS

A. The Contractor shall provide for the removal of all construction equipment and materials, with the exception of the site security fence, the equipment decontamination pad, and the wastewater storage pad which shall remain in place.

3.04 CLEANUP

A. The Contractor shall be responsible for the final collection and disposal of all miscellaneous rubbish and debris generated from the site operations.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02080 - REMEDIAL ACTION GENERATED WASTES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the requirements for handling of wastes generated during site preparation and material removal activities. These wastes shall include decontamination water, personal protective equipment, and site clearing wastes.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 DECONTAMINATION WATER

A. The Contractor shall be responsible for collection and disposal of all decontamination water generated from both equipment and personnel decontamination operations.

B. The water will be pumped to the onsite wastewater storage tanker truck for temporary storage.

C. As the onsite wastewater storage tanker truck nears capacity, its contents shall be sampled and disposed of at the approved offsite liquid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

3.02 PERSONAL PROTECTIVE EQUIPMENT

A. The Contractor shall be responsible for collection and disposal of all personal protective equipment generated during site preparation and material removal activities.

B. All personal protective equipment shall be collected at least daily and placed in the onsite solid hazardous waste rolloff.

C. As the onsite solid hazardous waste rolloff nears capacity, its contents shall be sampled and disposed of at the approved offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

3.03 SITE CLEARING

A. The Contractor shall be responsible for collection and disposal of all site clearing material generated during site preparation and material removal activities.

B. All site clearing material shall be placed in the onsite solid non-hazardous waste rolloff.

C. As the onsite solid non-hazardous waste rolloff nears capacity, its contents shall be sampled and disposed of at the approved offsite solid nonhazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02081 - TANKS

PART 1 - GENERAL

1.01 CONDITIONS

A. There are 53 tanks, numbered T-1 through T-53, staged on the northwest portion of the Site. A tank inventory has been performed, and Appendix A of these Specifications includes Table 1, titled "Tank Inventory Summary Table."

B. The tanks generally appear to be empty with minimal tank scale or sludge present. Most tanks are rusted and show signs of deterioration.

C. There is considerable brush present in the vicinity of the tanks which will need to be cleared prior to tank removal operations.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 STAGING

A. During site preparation activities including grading and drainage operations, exclusion zone fencing installation, and support zone facility installations, some of the 53 tanks will need to be moved.

B. Tanks shall be moved to inside the remedial boundary line as required to accommodate site preparation activities.

3.02 TANK CLEANING AND REMOVAL

A. Cleaning:

1. Each tank shall be placed on the decontamination pad for initial cleaning.

2. Disconnect miscellaneous attachments to tank such as tank insulation wrap, piping, and other appurtenances as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

   a. If material is non-metallic, place it in the solid nonhazardous rolloff container for subsequent disposal.

   b. If material is metallic, it shall be cleaned in the same manner as the tank itself.

3. The tank exterior shall be cleaned with a steam pressure washer capable of supplying 3,000 psi of pressure.

4. The tank exterior shall be tested for organic vapor concentrations and flammable or combustible vapor concentrations.

   a. Organic vapor concentrations are to be tested with a photoionization detector (PID). The PID reading must not be above background concentration in order to begin tank cutting operations.

   b. Flammable or combustible vapor concentrations are to be tested with a Lower Explosive Limit/Oxygen Meter (LEL/O_2). LEL/O_2 readings must show a non-flammable environment before tank cutting operations can begin.

   c. Should a tank fail any of these tests, it shall be vented and/or recleaned as required to pass the tests.

5. The tank shall be cut open (either longitudinally or by removing the ends) for access to the tank interior.

6. The tank interior shall be cleaned and tested in the same manner as the exterior (described above).

   a. A final PID survey shall be performed on the tank to verify that it is clean (no readings above background).

B. Removal:

1. The clean tank sections shall be removed from the decontamination pad and transported to the scrap staging area.

2. Additional cutting of the tank shall be performed at the scrap staging area as required by the offsite disposal facility. In the event that solidified materials are encountered in the tank during tank cleaning, the solidified portion of the tank (e.g., tank heel) shall be separated from the remainder of the tank.

3. The tank sections shall then be staged and loaded out for transportation to the offsite disposal facility.

4. The tank sections shall be transported to an offsite scrap/salvage facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL. The solidified portion of the tank shall be transported to an approved offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

5. The disposal facility shall supply weigh slips to the Contractor for each load disposed of.

6. The Contractor shall submit all weigh slips daily to the ECC Trust. These weigh slips will be used for measurement and payment purposes.

C. Appendix C of these specifications includes Figure 1, titled "Tank Handling Sequence" which describes the cleaning and removal operations.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02082 - DRUMS

PART 1 - GENERAL

1.01 CONDITIONS

A. Drums in various conditions exist at the Site. Some are deteriorating and show signs of buckling. There is the potential for empty and partially full drums. Some of the drums have no lids. All drums onsite have a capacity of 55 gallons. There are approximately 270 drums on the Site. A drum inventory was performed, and Appendix A of these Specifications includes Table 2, titled "Drum Storage Area Inventory Summary Table." The majority of the drums are located on the southern concrete pad, but there are drums located in various other areas onsite.

B. Appendix B of these Specifications includes chemical analyses of samples. This is a representation of the site contaminants.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 INITIAL DRUM SURVEY

A. An initial visual survey of the drums shall be performed by the Contractor. This survey shall consist of the following:

1. Drums shall be numbered (from D-1 through D-270±) and marked with paint.

2. The drums shall be classified based on their condition. The Contractor shall identify the following classes of drums:

a. Deteriorated and unsafe to move (DUM).

b. Deteriorated but safe to move (DSM).

c. Not deteriorated and safe to move (NDSM).

3. Drums that are classified as DUM shall be overpacked in place.

B. Appendix C of these specifications includes Figure 2, titled "Drummed Waste Initial Inspection/Classification."

3.02 DRUM OPENING

A. After the drums have been segregated by grouping on the concrete pad, the drums shall be opened. A remote drum opener shall be used to open bulging and warped drums and to protect personnel from unknown drum contents. When removing the lid from the drum, the bucket of a backhoe or similar heavy equipment shall be held over the lid to prevent the lid from flying open. A more detailed explanation of drum opening is given in the attached Quality Assurance Project Plan (QAPP).

3.03 OVERPACKED DRUMS

A. It is assumed that drums needing overpacking will not contain any liquids due to their deteriorated condition.

B. The drum contents inside the overpack shall be checked for organic vapor concentrations using an Organic Vapor Meter (OVM).

1. If the OVM scan shows any readings above background, then the SSO shall be immediately notified prior to any further work being performed.

2. If the OVM scan does not show any readings above background, then the following procedures shall be implemented:

a. If there is PPE and/or miscellaneous solid waste present in the drum, then it shall be handled as per Section 02082 Part 3.08A.2.a. If the drum is now empty, then it shall be handled as per Section 02082 Part 3.05 A.

b. If there are any soils, sludges, or drill cuttings present in the drum, then the drum contents shall be sampled for compatibility. The original drum shall remain inside the overpack and it shall remain in its original place during analysis.

(1) If the sample is found to be compatible with other unclassified soils, sludges, or drill cuttings, then the soils, sludges, or drill cuttings shall be removed and bulked. After the drum contents are emptied, the drum overpack shall be removed and the drum shall be handled as per Section 02082 Part 3.05 A.

(2) Subsequent to compatibility testing, further chemical analysis shall be performed on an individual or a composite of the bulked soils, sludges, or drill cuttings to satisfy the offsite disposal facility requirements. This testing may indicate compatibility with those soils, sludges, or drill cuttings being stored in the onsite bulk soils rolloff. The solid hazardous waste disposal facility shall meet the requirements of Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

3.04 STAGING AND SEGREGATION OF DRUMS

A. Staging:

1. All drums shall be staged on the southern concrete pad.

B. Segregation:

1. All drums shall be segregated based on the markings and labeling present on the drums. The drums shall be segregated and staged on the southern concrete pad according to the following groupings:

a. Empty.

b. Drill Cuttings.

c. Purge/Decontamination Waters.

d. Personal Protection Equipment (PPE)/Miscellaneous Solid Waste.

e. Unclassified (Unable to Determine Contents).

3.05 EMPTY DRUMS

A. Empty drums shall be cleaned if needed to meet RCRA criteria, and crushed and placed in the onsite solid nonhazardous rolloff container. As the onsite solid nonhazardous rolloff container nears capacity, it shall be transported to an approved offsite solid nonhazardous disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

B. Appendix C of these specifications includes Figure 3, titled "Empty Drum Handling."

3.06 DRUMS CONTAINING DRILL CUTTINGS

A. The drum contents shall be checked for organic vapor concentrations using an OVM.

1. If the OVM scan shows any readings above background, then the Site Safety Officer (SSO) shall be immediately notified prior to any further work being performed.

2. If the OVM scan does not show any readings above background, then the following procedures shall be implemented:

a. If there is a liquid layer present in the drum, then it shall be decanted off and placed into a mobile storage tank. As the mobile storage tank nears capacity, it shall be transported to the onsite 5,000-gallon hazardous wastewater storage tanker located on the wastewater storage pad. The 5,000-gallon hazardous wastewater storage tanker shall be transported to an offsite hazardous liquids disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

b. If after decanting there is solid waste other than drill cuttings present in the drum, it shall be transferred to the onsite solid hazardous waste rolloff. As the onsite solid hazardous waste rolloff nears capacity, it shall be transported to an offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

c. The drill cuttings shall be transferred to the onsite bulk soils rolloff located on the southern concrete pad. The bulk soils rolloff shall remain on the concrete pad throughout the job with a tarp over it. Additional bulk soils rolloff containers shall be supplied as needed due to the volume of soil present in the drums.

d. After the drum has been emptied of its contents, it shall be handled as per Section 02082, Part 3.05 A.

e. Appendix C of these specifications includes Figure 4, titled "Drummed Waste Handling Drill Cuttings" which describes the removal procedures for drums containing drill cuttings.

3.07 DRUMS CONTAINING PURGE AND DECONTAMINATION WATERS

A. The drum contents shall be checked for organic vapor concentrations using an OVM.

1. If the OVM scan shows any readings above background, then the SSO shall be immediately notified prior to any further work being performed.

2. If the OVM scan does not show any readings above background then the following procedures shall be implemented:

a. The purge and/or decontamination waters shall be decanted off and placed into the mobile storage tank. As the mobile storage tank nears capacity it shall be transported to the onsite 5,000-gallon hazardous wastewater storage tanker located on the wastewater storage pad. The 5,000-gallon hazardous wastewater storage tanker shall be transported to an offsite hazardous liquid disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

b. If after decanting there is solid waste other than drill cuttings present in the drum, it shall be transferred to the onsite solid hazardous waste rolloff. As this onsite solid hazardous waste rolloff nears capacity, it shall be transported to an offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

c. Any drill cuttings remaining in the drum shall be transferred to the onsite bulk soils rolloff located on the southern concrete pad.

d. After the drum has been emptied of its contents, it shall be handled as per Section 02082 Part 3.05 A.

e. Appendix C of these Specifications includes Figure 5, titled "Drummed Waste Handling Purge and Decontamination Waters" which describes the removal procedures for drums containing purge and decontamination waters.

3.08 DRUMS CONTAINING PERSONAL PROTECTIVE EQUIPMENT (PPE) AND MISCELLANEOUS SOLID WASTE

A. The drum contents shall be checked for organic vapor concentrations using an OVM.

1. If the OVM scan shows any readings above background, then the SSO shall be immediately notified prior to any further work being performed.

2. If the OVM scan does not show any readings above background, then the following procedures shall be implemented:

a. The PPE and miscellaneous solid waste shall be transferred to the onsite solid hazardous waste rolloff. As this onsite hazardous waste rolloff nears capacity, it shall be transported to an offsite solid hazardous disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

b. In the event that there are drill cuttings or purge and decontamination waters present in the drums, they shall be handled as described earlier in this section.

c. After the drum has been emptied of its contents, it shall be handled as per Section 02082 Part 3.05 A.

d. Appendix C of these Specifications includes Figure 6, titled "Drummed Waste Handling PPE/Miscellaneous Solid Waste" which describes the removal procedures for drums containing PPE and miscellaneous solid waste.

3.09 UNCLASSIFIED DRUMS

A. These will consist of all drums which cannot otherwise be grouped into any of the other categories.

B. The drum contents shall be checked for organic vapor concentrations using an OVM.

1. If the OVM scan shows any readings above background, then the SSO shall be immediately notified prior to any further work being performed.

2. If the OVM scan does not show any readings above background, then the following procedures shall be implemented:

   a. If there is PPE and/or miscellaneous solid waste present in the drum, then it shall be handled as per Section 02082 Part 3.08 A.2.a.

   b. If there is any liquid in the drum, then it shall be sampled for compatibility.

      (1) If the sample is found to be compatible with other unclassified liquids, then the liquids shall be decanted off and bulked.

      (2) Subsequent to compatibility testing, further chemical analysis shall be performed on an individual or a composite of the bulked liquids to satisfy the offsite disposal facility requirements. This testing may indicate compatibility with those liquids being stored in the onsite hazardous wastewater tanker truck. The hazardous liquid wastewater disposal facility shall meet the requirements of Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

   c. If there are any soils, sludges, or drill cuttings present in the drum, then the drum contents shall be sampled for compatibility.

      (1) If the sample is found to be compatible with other unclassified soils, sludges, or drill cuttings, then the soils, sludges, or drill cuttings shall be removed and bulked. After the drum contents are emptied, the drum overpack shall be removed and the drum shall be handled as per Section 02082 Part 3.05 A.

      (2) Subsequent to compatibility testing, further chemical analysis shall be performed on an individual or a composite of the bulked soils, sludges, or drill cuttings to satisfy the offsite disposal facility requirements. This testing may indicate compatibility with those soils, sludges, or drill cuttings being stored in the onsite bulk soils rolloff. The solid hazardous waste disposal facility shall meet the

requirements of Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

d. After the drums which are compatible have been emptied, then the drums shall be handled as per Section 02082 Part 3.05 A.

e. Appendix C of these Specifications includes Figure 7, titled "Drummed Waste Handling Unclassified Drums" which describes the removal procedures for unclassified drums.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02083 - STRUCTURES

PART 1 - GENERAL

1.01 CONDITIONS

A. There are two structures on the Site which shall be demolished. These include the A-frame house and the process building. A structure inventory has been performed and Appendix A of these Specifications includes Table 3, titled "Structure Inventory Summary Table".

B. The inventory of structure contents is not an all-inclusive list of removal items, and the Contractor is responsible for determining actual required removal items during the pre-bid site walk.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 SAMPLING AND ANALYSES

A. As per the Field Sampling Plan, any porous structural materials from the process building shall be sampled and analyzed to determine if contaminated.

3.02 DEMOLITION

A. Prior to demolition of the two structures, debris around the structures shall be removed and placed in the onsite nonhazardous rolloff container.

B. After the debris is removed, a layer of aggregate (of adequate size) of sufficient thickness and areal extent shall be spread around the structure on the ground prior to the start of demolition. This aggregate layer is to prevent the contact of building debris with the ground surface and eliminate the removal of any existing potentially contaminated soil during demolition activities.

C. Demolition of the structures shall be done so as to minimize disturbance to the ground within the remedial boundary.

D. All non-metallic building materials and contents shall be cut into manageable pieces as needed and transported to the onsite nonhazardous rolloff container. As the onsite nonhazardous rolloff container nears capacity, it shall be transported to an approved offsite solid nonhazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

1. An exception to this may be the cinder block from the process building. If it is determined to be contaminated, then it shall be placed in the onsite solid hazardous rolloff container. As the onsite solid hazardous rolloff container nears capacity, it shall be transported to an approved offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

2. Another exception is the small cans of paint and pesticides in the A-frame house. These cans shall be staged on the southern concrete pad pending laboratory analysis for disposal.

E. All metallic building materials such as steel beams and aluminum siding shall be handled in the following manner:

1. Cleaning

a. Building material shall be placed on the decontamination pad for cleaning.

b. Disconnect miscellaneous attachments such as insulation and place it in the onsite solid nonhazardous rolloff container for subsequent disposal as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

c. The building material shall be cleaned with a steam pressure washer capable of supplying 3,000 psi pressure.

d. The building material shall be tested for organic vapor concentrations.

(1) Organic vapor concentrations are to be tested with a photoionization detector (PID). The PID reading must not be above background concentration in order to begin cutting operations.

(2) Should building materials fail this test, they shall be recleaned as required to pass the test.

(3) A final PID survey shall be performed on the building material to verify that it is clean (no readings above background).

2. Removal:

a. The clean building material sections shall be removed from the decontamination pad and transported to the scrap staging area.

b. Additional cutting of the building material shall be performed at the scrap staging area as required by the offsite disposal facility.

c. The building material shall then be staged and loaded out for transportation to the offsite disposal facility.

d. The building material shall be transported to an offsite scrap/salvage facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

e. The disposal facility shall supply weight slips to the Contractor for each load disposed of.

f. The Contractor shall submit all weigh slips daily to the Engineer. These weigh slips will be used for measurement and payment purposes.

F. All concrete floors and foundations below grade shall be left in place.

G. The boiler in Room 1 of the process building shall be handled as per Section 02089 - BOILER.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02084 - MISCELLANEOUS DEBRIS AREAS

PART 1 - GENERAL

1.01 CONDITIONS

A. There are six distinct miscellaneous debris areas (Debris Area 1 through Debris Area 6) which have been delineated on Drawing Number C-1, Site Conditions. An inventory of the items contained in each debris area has been performed and Appendix A of these Specifications includes Table 4, titled "Miscellaneous Debris Area Inventory Summary Table".

B. The inventory is not an all-inclusive list of removal items, and the Contractor is responsible for determining the actual required removal items during the pre-bid site walk.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 REMOVAL

A. All the materials from the six debris areas shall be gathered up and placed in the onsite nonhazardous rolloff container. As the onsite nonhazardous rolloff container nears capacity, it shall be transported to an offsite solid nonhazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

B. During debris removal, the Contractor shall minimize disturbance to the potentially contaminated existing ground surface within the remedial boundary. In the event that any existing soil is excavated, it shall be placed in the onsite bulk soils rolloff located on the southern concrete pad.

C. All concrete slabs shall remain in place and are not part of this contract.

D. Any additional site clearing which must be performed to accomplish this work shall be done as per Section 02115 - SITE CLEARING.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02085 - SOIL VAPOR EXTRACTION PILOT STUDY AREA

PART 1 - GENERAL

1.01 CONDITIONS

A. There is a Soil Vapor Extraction (SVE) Pilot Study Area present on the Site. It consists mainly of PVC piping with some other debris. This pilot study was originally conducted in 1988 and the materials were left onsite. The SVE Pilot Study Area has been delineated on Drawing Number C-1, Site Conditions. An inventory of the items contained in the SVE Pilot Study Area was performed and Appendix A of these Specifications includes Table 5, titled "SVE Pilot Study Area Inventory Summary Table".

B. The inventory is not an all-inclusive list of removal items, and the Contractor is responsible for determining the actual required removal items during the pre-bid site walk.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 REMOVAL

A. All of the above ground materials associated with the SVE Pilot Study Area shall be removed. This will include PVC piping, plastic sheeting, tires, and timbers. Any open piping remaining shall be capped. Any below ground piping shall remain in place, and it is not part of this contract.

B. The material removed from the SVE Pilot Study Area shall be placed in the onsite nonhazardous rolloff container. As the onsite nonhazardous rolloff container nears capacity, it shall be transported to an offsite nonhazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

C. The Contractor shall minimize disturbance to the SVE soil piles and the potentially contaminated existing ground surface within the remedial boundary. The soil piles are to remain in place and are not included with this contract. In

the event that any existing soil is excavated, it shall be placed in the onsite bulk soils rolloff located on the southern concrete pad.

D. Any additional site clearing which must be performed to accomplish this work shall be done as per Section 02115 - SITE CLEARING.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02086 - OTHER SITE DEBRIS

PART 1 - GENERAL

1.01 CONDITIONS

A. In addition to the Miscellaneous Site Debris described in Section 02084 of these Specifications, there is also Other Site Debris scattered throughout the Site. Other Site Debris is comprised of items such as the dismantled modular tanks, wood piles, aluminum siding, and a pallet of bags of bentonite. An inventory of the Other Site Debris was performed and Appendix A of these Specifications includes Table 6, titled "Other Site Debris Inventory Summary Table".

B. The inventory is not an all-inclusive list of removal items, and the Contractor is responsible for determining the actual required removal items during the pre-bid site walk.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 REMOVAL

A. All of the Other Site Debris scattered around the Site shall be gathered up and placed in the onsite nonhazardous rolloff container. As the onsite nonhazardous rolloff container nears capacity, it shall be transported to an offsite solid nonhazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

B. Other Site Debris does not include any of the material outside the existing chainlink fence or along the boundary of the support zone. This material will be removed by others and is not part of this contract.

C. Any additional site clearing which must be performed to accomplish this work shall be done as per Section 02115 - SITE CLEARING.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02088 - EXISTING FENCING

PART 1 - GENERAL

1.01 CONDITIONS

A. The existing site fence is chainlink, and it is located as shown on Drawing Number C-1, Site Conditions.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 REMOVAL

A. The existing fence shall be removed to the locations shown on Drawing Number C-2, Site Preparation and Grading Plan.

B. The existing fence shall be taken down in stages corresponding to the installation of the new site security fence as per Section 02800 - FENCES.

C. The existing fence post foundations that are located outside the Remediation Boundary shall be removed.

D. The existing fence post foundations that are located inside the Remediation Boundary shall remain in place after the posts have been cut flush with the ground surface.

E. All fencing material will be transferred to the onsite solid nonhazardous rolloff container. As the onsite solid nonhazardous rolloff nears capacity, it shall be transported to an approved offsite solid nonhazardous disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02089 - BOILER

PART 1 - GENERAL

1.01 CONDITIONS

A. There is a boiler present in Room 1 of the process building. A detail showing similar boiler construction is provided in Appendix D of these Specifications.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 REMOVAL

A. The Contractor shall remove the boiler and all associated appurtenances intact from Room 1 of the process building.

B. The boiler shall be secured and contained to prevent any leakage of contents prior to transport offsite. The securing and containment method shall be approved by the Engineer prior to offsite transportation.

C. The boiler shall be transported to an approved offsite solid hazardous waste disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02090 - EQUIPMENT DECONTAMINATION PAD

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall be responsible for construction of the decontamination pad meeting the requirements of these Specifications and Drawings.

1.02 RELATED SECTIONS

A. The Contractor's particular attention is directed to the following sections related to decontamination pad construction:

1. Section 01050 - FIELD ENGINEERING AND SURVEYING
2. Section 02180 - MANHOLES
3. Section 02200 - EARTHWORK
4. Section 03200 - CONCRETE REINFORCEMENT
5. Section 03250 - CONCRETE JOINT ACCESSORIES
6. Section 03300 - CAST-IN-PLACE CONCRETE
7. Section 03350 - CONCRETE FINISHES

PART 2 - PRODUCTS

2.01 DESCRIPTION

A. Trench frame and grate shall be Neenah Model R-4990-EX and shall be installed as directed by the manufacturer.

B. Manhole frame and lid shall be Neenah Model R-1740-02 and shall be installed as directed by the manufacturer.

C. Ferrous castings shall be of uniform quality, free from blowholes, shrinkage, distortion or other defects. They shall be smooth and well cleaned by shotblasting.

D. Metal used in the manufacture of castings shall conform to ASTM A48-83 Class 35B for Gray Iron or ASTM A526-80 Grade 65-45-12 for ductile iron.

E. All castings shall be manufactured true to pattern; component parts shall fit together in a satisfactory manner. Round frames and covers shall have continuously machined bearing surfaces to prevent rocking and rattling.

PART 3 - EXECUTION

3.01 DESCRIPTION

A. The Contractor shall be responsible for layout of the decontamination pad as shown on the Drawings including lines, slopes, and grades.

B. The Contractor shall be responsible for all forms, joints, placement of concrete, and finishes in accordance with Division 3 - CONCRETE.

C. The Contractor shall be responsible for, but not limited to, installation of the following components related to construction of the decontamination pad:

1. Sump grate.

2. PVC pipe connecting the sump and the decontamination water storage manhole.

3. 6-inch diameter precast concrete manhole.

4. Manhole frame and cover.

5. Wood sidewall splash guards including geotextile screen.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02091 - WASTEWATER STORAGE PAD

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall be responsible for construction of the wastewater storage pad meeting the requirements of these Specifications and Drawings.

1.02 RELATED SECTIONS

A. The Contractor's particular attention is directed to the following sections related to wastewater storage pad construction:

1. Section 01050 - FIELD ENGINEERING AND SURVEYING

2. Section 02200 - EARTHWORK

3. Section 02280 - GEOTEXTILES

PART 2 - PRODUCTS

2.01 HDPE GEOMEMBRANES

A. HDPE geomembranes shall be manufactured of new, first-quality products, and designed and manufactured specifically for the intended purpose.

B. The resin used in manufacturing the HDPE shall meet the following minimum requirements:

Specific Gravity	ASTM D792 Method A or ASTM D1505	$\geq .9835$
Melt Index	ASTM D1238 Condition E	< 1.1 g/10 min

C. Reclaimed polymer shall not be added to the resin.

D. HDPE geomembranes shall meet the following minimum requirements.

Sheet Thickness	Continuous physical or ASTM D1593	60 mils ±10 percent
Tensile strength at yield	ASTM D638 Type IV	140 lb/in-width
Tensile strength at break	ASTM 638 Type IV	240 lb/in-width
Elongation at yield	ASTM D638 Type IV	<20 percent
Elongation at break	ASTM D638 Type IV	700 percent
Modulus of elasticity	ASTM D638	80,000 psi
Tear resistance	ASTM D1004 Die C	45 lb
Puncture resistance	FTMS 101B/2065	105 lb
Resistance to soil burial elongation at break	ASTM D3083 using ASTM D638 Type IV Dumbbell at 2 ipm	±1 percent
Dimensional stability (each direction)	ASTM D1204 212 degrees F, 15 minutes	±1 percent
Environmental stress crack resistance	ASTM D1204 Condition C	0 failures in 1,000 hrs
Low temperature brittleness	ASTM D746 Procedure B	-40 degrees F
Carbon black content	ASTM D1603	2 to 3 percent
Carbon black dispersion rating	ASTM D3015	A-1

E. Liners shall consist of an HDPE sheet containing a maximum of 3 percent by weight of additives, fillers, or extenders with carbon black for ultraviolet resistance.

F. The liner material shall be so produced as to be free of holes, blisters, undispersed raw materials, or any sign of contamination of foreign matter. Any such defect shall be repaired using the extrusion or fusion welding technique in accordance with the manufacturer's recommendations.

G. Geomembrane shall be supplied in prefabricated panels or blankets or in rolls from one manufacturer.

H. Fabricated seams (if applicable) and field seams for 60 mil thick geomembranes shall meet the following specifications.

Seam strength (at yield point)	ASTM D3083 as modified in NSF 54	120 lb/in and film tear bond
Peel adhesion	ASTM D413 or ASTM D638 as modified in NSF 54	Film tear bond

2.02 AGGREGATE

A. The aggregate material placed over geotextile and HDPE liner shall be Indiana Department of Highways (IDOH) Material Number 53. The aggregate shall have a gradation and quality equal to IDOH No. 53 as defined in the standard specifications.

2.03 GEOTEXTILES

A. The geotextile used for the wastewater storage pad shall meet the requirements of Section 02280 - GEOTEXTILES.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The Contractor shall be responsible for layout of the wastewater storage pad as shown on the Drawings including lines slopes and grades.

B. The Contractor will proof roll the subgrade a minimum of three passes with a smooth drum vibratory compactor with a total dynamic force of not less then 7,000 pounds.

C. Contractor is responsible for the HDPE geomembrane procurement, transportation, storage, handling, testing, and installation. Any damaged or unacceptable material shall be replaced at no additional cost to the ECC Trust. Geomembrane liner shall be protected during storage to prevent material degradation. Handling is to be done in a manner that will prevent any damage to the material.

D. Contractor will certify to the Engineer in writing that the subgrade on which the geomembrane liner will be installed is acceptable. Those areas where the surface is unsatisfactory for geomembrane liner placement shall be corrected by the Contractor until acceptable. During liner installation, the soil surface will be maintained in such a manner as to preserve the surface condition. Any damage to the subgrade caused by liner installation or erosion shall be repaired at no cost to the ECC Trust.

E. Geomembrane shall not be placed in areas that have become softened by precipitation as determined by hand penetrometer (i.e., a penetrometer reading of less than 1.0 tsf).

F. Prior to geomembrane placement, the anchor trench shall be excavated to 2 feet below existing grade.

G. The anchor trench shall be backfilled and compacted with hand-operated equipment.

H. Care shall be taken when backfilling the trenches to prevent any damage to the geomembrane.

I. Geomembrane liner placement shall not proceed at an ambient temperature below 5 degrees C (40 degrees F) or above 40 degrees C (104 degrees F), during any precipitation, in the presence of excessive moisture (e.g., fog, dew), in an area of ponded water, or in the presence of excessive winds that might affect proper placement

Liner placement shall follow these guidelines:

1. Equipment used shall not damage the geomembrane by any means.

2. Personnel working on the geomembrane shall not smoke, wear damaging shoes, or engage in other activities that could damage the geomembrane.

3. The method used to unroll the panels shall not cause scratches or crimps in the geomembrane and shall not damage the supporting soil.

4. The method used to place the panels shall minimize wrinkles.

5. Sand bags shall be placed to prevent the geomembrane from being uplifted by wind. In case of high winds, continuous loading is recommended along the edges of panels to minimize risk of wind flow under panels.

6. The geomembrane in high traffic areas shall be protected by geotextiles, extra geomembrane, or other materials.

J. Any panel or portion thereof that, in the judgement of the Engineer, becomes seriously damaged (i.e., torn or twisted permanently) shall be replaced by the Contractor at no additional cost to the ECC Trust.

K. Seams shall be oriented longitudinally with the slopes (i.e., positioned up and down slopes).

L. Overlapping and temporary bonding requirements are as follows:

1. The panels of HDPE geomembrane shall be overlapped by a minimum of 3 inches for extrusion welding or 5 inches for fusion welding.

2. The procedure used to temporarily bond adjacent panels together shall not damage the geomembrane; the temperature of any spot welding apparatus shall be controlled such that the geomembrane is not damaged.

3. No solvent or adhesive shall be used unless approved in writing by the Engineer.

M. Seams shall be prepared in accordance with the following requirements.

1. Prior to seaming, the seam area shall be clean and free of moisture, dust, dirt, and foreign material.

2. If seam overlap grinding is required, the process shall be completed according to the manufacturer's instructions and in a way that does not damage the geomembranes.

3. Seams shall be aligned with the fewest possible number of wrinkles and "fish mouths".

N. Approved processes for field seaming are extrusion welding and fusion welding. Only apparatuses that have been specifically approved by the Engineer (by make and model) shall be used. Welding process requirements are as follows:

1. Extrusion Process:

   a. The welding apparatus shall be equipped with gauges that indicate the temperature in the apparatus and at the nozzle.

   b. Contractor will maintain one spare operable seaming apparatus onsite.

   c. The extruder shall be purged prior to beginning a seam until all heat degraded extrudate has been removed from the barrel.

2. Fusion Process:

   a. The fusion welding apparatuses shall be automated, vehicular-mounted devices that produce a double seam with an enclosed space.

   b. The fusion welding apparatus shall be equipped with gages that indicate its temperatures and pressures.

   c. Contractor will maintain one spare operable seaming apparatus onsite.

   d. A firm support directly under the seam overlap will be provided.

   e. A movable protective layer will be used directly below each overlap of geomembrane that is to be seamed to prevent buildup of moisture between the sheets.

O. Field seaming shall be conducted within the following weather condition requirements:

1. Unless authorized in writing, no seaming shall be attempted below 5 degrees C (40 degrees F) or above 40 degrees C (104 degrees F).

2. Between 5 degrees C (40 degrees F) and 10 degrees C (50 degrees F), seaming shall be possible with controlled cooling if the geomembrane is preheated.

3. Above 10 degrees C (50 degrees F), no preheating shall be required.

No "fish mouths" shall be allowed within the seam area. Where "fish mouths" occur, the material shall be cut, overlapped, and an overlap fusion weld shall be applied. All welds on completion of the work shall be tightly bonded. Any membrane area showing injury caused by excessive scuffing, puncture, or distress for any cause shall be replaced or patched.

P. Contractor will retain all ownership and responsibility for the geomembrane until accepted by the Engineer.

Q. During backfill over the geotextile and geomembrane, the following considerations shall be compiled with:

1. Placement of IDOH No. 53 - Aggregate fill on the geotextile and geomembrane shall not proceed at an ambient temperature below 5 degrees C (40 degrees F) or in a manner such that geotextile or geomembrane damage is likely.

2. Equipment used for placing shall not be driven directly on the geomembrane or the protective geotextile.

3.02 HDPE LINER REPAIRS

A. Repair Procedures:

1. Tears or pinholes, blisters, large holes, undispersed raw materials, and contamination by foreign matter shall be repaired by patches or seaming as determined by the Engineer.

2. Surfaces of HDPE that are to be patched shall be prepared to manufacturer's specifications.

3. Patches shall be round or oval in shape, made of the same geomembrane, and extended a minimum of 4 inches beyond the edge of defect or repair.

4. Patches shall be applied using approved seaming methods.

B. Seam Reconstruction Procedures:

1. Seam reconstruction for the extrusion welding process shall be achieved by grinding the existing seam and rewelding a new seam.

2. Seam reconstruction for the fusion process shall be achieved by cutting out the existing seam and welding in a replacement strip.

3.03 HDPE SUMP AND COLLECTION PIPES

A. The prefabricated HDPE sump shall be constructed with a minimum 3/8 inch thick walls and base.

B. Joints in the sump and between the sump and HDPE collection pipe shall be extrusion welded and constructed as directed by the manufacturer.

C. 4 inch perforated HDPE pipe shall have a standard dimensional ratio of 17. Perforations shall be 1/2 inch diameter at 45° from the vertical and be spaced 6 inches on center.

3.04 AGGREGATE

A. IDOH No. 53 aggregate shall be placed over the geotextile and geomembrane to a thickness of 12 inches or as shown on the Drawings.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02095 - ONSITE WASTE STORAGE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the requirements for temporary onsite waste storage associated with site preparation and material removal activities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All onsite waste storage devices shall meet all Federal and state requirements.

PART 3 - EXECUTION

3.01 ONSITE BULK SOILS ROLLOFF

A. The onsite bulk soils rolloff shall have a capacity of at least 40 cubic yards. It shall be watertight, and it must have a cover (such as a tarp).

B. The onsite bulk soils rolloff shall be approved prior to use by the Engineer.

C. It shall be placed on the southern concrete pad away from all drum handling activities and other work activities.

3.02 ONSITE SOLID HAZARDOUS ROLLOFF

A. The onsite solid hazardous rolloff shall be of the type and capacity required by the approved offsite solid hazardous waste disposal facility. At a minimum, it shall be watertight and have a cover (such as a tarp).

B. The onsite solid hazardous rolloff shall be placed in the location as shown on the Drawings or at an alternate location approved by the Engineer.

3.03 ONSITE SOLID NON-HAZARDOUS ROLLOFF

A. The onsite solid non-hazardous rolloff shall be of the type and capacity required by the approved offsite solid non-hazardous waste disposal facility. At a minimum, it shall be watertight and have a cover (such as a tarp).

B. The onsite solid non-hazardous rolloff shall be placed in the location as shown on the Drawings or at an alternate location approved by the Engineer.

3.04 ONSITE HAZARDOUS WASTEWATER STORAGE TANKER TRUCKS

A. The Contractor shall supply two onsite hazardous wastewater storage tanker trucks. The tanker trucks shall be located on the wastewater storage pad.

B. The onsite hazardous wastewater storage tanker trucks shall be of the type and capacity required by the approved offsite hazardous liquid disposal facility. At a minimum, it shall be watertight, and it shall have a capacity of at least 5,000 gallons.

C. The hazardous wastewater storage tanker trucks shall store liquids generated from decontamination operations, and compatible liquids found in the drums.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02115 - SITE CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Site clearing shall be performed as required to perform the site preparation and material removal activities.

B. This item shall consist of the clearing and disposal of trees, stumps, downtimber, brush, undergrowth, and any other vegetation that may hinder any aspect of the removal activities, including the installation of temporary facilities. There are no large trees within the site preparation area and minimum clearing of site vegetation is anticipated.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 CLEARING

A. The Contractor shall clearly delineate the limits of clearing in the field for approval by the Engineer. The Contractor shall not remove or disturb any trees or other vegetation beyond the approved limits. The Contractor shall be responsible for preserving and protecting from injury all trees outside the limits of clearing. Limbs and branches to be trimmed shall be cut close to the trunk or main branch. All material to be cleared shall be removed to grade level.

B. During clearing operations, the Contractor shall minimize disturbance to the existing ground surface within the remedial boundary. In the event that any existing soil is excavated, it shall be placed in the onsite bulk soils rolloff located on the southern concrete pad.

C. During cleaning and construction operations, the Contractor shall protect benchmarks, existing monitoring wells, and existing piezometers from damage or displacement.

3.02 DISPOSAL

A. Burning of the material shall not be permitted.

B. The Contractor shall be responsible for disposing of the materials at an offsite solid nonhazardous disposal facility as per Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02175 - CULVERTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent of culvert work is indicated on the Drawings and by the requirements of this section.

B. Culverts shall be constructed of Class V reinforced concrete pipe, size and length as indicated on the Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02200 - EARTHWORK.

B. Section 02500 - ACCESS ROADS, SUPPORT ZONE, SUPPLEMENTAL STORAGE AREA, AND PARKING AREAS

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM).

1. A 185 - Welded Steel Wire Fabric for Concrete Reinforcement.

2. A 615 - Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.

3. A 443 - Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

B. Indiana Department of Highways, Standard Specifications, 1988.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for culvert materials and products. Certificates of conformance for all materials shall be submitted assuring conformance with these Specifications. All pipe and appurtenances specified herein shall be covered by a guarantee certificate furnished by the Contractor and signed by an officer of the pipe manufacturers.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Obtain materials from firms regularly engaged in the manufacture of Class V reinforced concrete pipe of types, materials, and sizes required, whose products have been in satisfactory use in similar services for not less than 5 years.

B. Installer's Qualifications: Employ a firm with at least 3 years of successful installation experience on projects with work similar to that required for this project.

PART 2 - PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. Pipe used for culverts shall be Class V heavy duty reinforced concrete pipe meeting the requirements of Section 906.02 of the Indiana Department of Highways Standard Specifications.

B. Culvert pipes shall utilize tongue and groove joints.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Inspect piping before installation to detect apparent defects. Mark defective materials with paint and promptly remove from the Site.

2. Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.

3. Prepare inlets and outlets as shown on the Drawings. Place aggregate to the thickness and extents as indicated on the Drawings.

B. Laying Pipe:

1. Pipes shall be laid true to the lines and grades shown on the Drawings. The grade shown on the profile is the invert to which the work must conform. Work not conforming to the grade shall be corrected by the Contractor at his own expense. The locations of the proposed lines are shown on the Drawings. Approximate depths are shown on the Drawings.

2. After the trench has been brought to the proper grade as heretofore specified, the pipe and fittings shall be laid. Care shall be taken to lay the pipe to true lines and grades. Every pipe laid shall be tested as to grade and alignment. Care must be taken to fit the joints together properly so that the centers of the pipes shall be in one and the same straight line, and so as to give an opening of even thickness, all around.

3. Carefully handle and lower pipe into the trench. Take special care in laying pipe, to ensure that each length abuts against the next in such a manner that there shall be no shoulder or unevenness of any kind along the inside of the bottom half of the pipe line. No wedging or blocking will be permitted in laying any pipe unless by written order or permission from the Engineer.

4. Bed each pipe section on a solid foundation before making successive joints. Bring no pipe section into position until the preceding length has been thoroughly embedded and secured in place. Correct any defects due to settlement at Contractor's own expense. All pipe bedding shall be as shown on the Drawings.

5. Use proper and suitable tools and appliances for the safe and convenient handling and laying of pipes.

6. Whenever a pipe requires cutting, to fit into the line or to bring it to the required location, cut the pipe in a satisfactory manner so as to leave a smooth end, without extra compensation.

7. Keep the excavation in which pipe is being laid free from water and make no joint under water. Do not allow water to rise in the excavation until the joint material has received its set. Use the greatest care to secure watertightness and to prevent damage to, or disturbance of the joints during the refilling process, or at any time. After pipes have been laid and the joints have been made, allow no walking on or working over them, except such as may be necessary in tamping, until there is a aggregate covering over their top.

8. Lay no pipe upon a foundation into which frost has penetrated nor at any time when the Engineer shall deem that there is danger of the formation of ice or other penetration of frost at the bottom of the excavation. Work may proceed during subfreezing conditions, at the discretion of the Engineer, provided that the minimum length of open trench and promptness of refilling are observed.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02180 - MANHOLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers the furnishing and installation of the manhole adjacent to the decontamination pad used for temporary storage of decontamination water.

1.02 RELATED WORK NOT INCLUDED

A. Section 02090 - EQUIPMENT DECONTAMINATION PAD

B. Section 02200 - EARTHWORK

C. Division 3 - CONCRETE

1.03 QUALITY ASSURANCE

A. Source Quality Control:

1. Maintain uniform quality of products and component compatibility by using the products of one manufacturer in the case of precast reinforced concrete manholes.

2. Obtain certificate of construction compliance with ASTM C 478 from the precast reinforced concrete manhole manufacturer.

1.04 SUBMITTALS

A. Manufacturer's Product Data:

1. Manufacturer's published detail drawings, modified to suit design conditions if required, and Contractor prepared drawings as applicable.

2. Manufacturer's descriptive literature and specifications covering the product specified. Include installation information.

B. Certificates:

1. Manufacturer's certification that components and products will be manufactured in accordance with specified reference standards for components and products.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Transport and handle precast reinforced concrete manhole components and other products specified herein in a manner recommended by the respective manufacturers of such to prevent damage and defects.

B. Store precast reinforced concrete manhole components in accordance with manufacturer's recommendations to prevent joint damage and contamination. Exercise such care in storage of other specified products as recommended by the respective manufacturers.

1.06 JOB CONDITIONS

A. Environmental Requirements:

1. In no instance set or construct collection sump bases on subgrade containing frost.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS

A. Waterproofed Mortar: Material composition meeting requirements of ASTM C 270, Type M with waterproofing admixture included.

1. Medusa Cement Company; Medusa Waterproofing Paste or Powder.
2. Grace Construction Materials; Hydratite.
3. Chem-Master Corporation; Hydrolox.
4. Or Equal.

B. Manhole Steps: Design as indicated on Drawings.

1. Ductile Iron Steps: Model R-1981-W manufactured by Neenah Foundry Company. Coat that portion of step being embedded in concrete with heavy bodied bituminous paint.

C. Manhole Frame and Cover: Model R-1740-D2 manufactured by Neenah Foundry Company. Frame and cover design and dimensions as indicated on Drawings.

2.02 PRECAST REINFORCED CONCRETE MANHOLE COMPONENTS

A. Materials and Construction: Conforming to requirements specified in ASTM C 478 except as follows:

1. Concrete: Composition and compressive strength confirming to ASTM C 478 except use Type II or Type III cement in manhole components and increase compressive strength to 4500 psi (at 28 days) in precast bases.

2. Casting and Curing: Wet cast and steam curing process in accordance with Sections 3.6.11 and 3.7.2 of AWWA C 302.

3. Lifting Holes and Lugs: Thru-wall holes not permitted in manhole component construction. Factory install lifting keys or lugs integrally in manhole components.

4. Manhole Steps: Factory installed in manhole components, prealigned vertically, spaced on equal centers, and located the minimum distance from ends of risers and top sections as indicated on drawings.

5. Manhole Component Seals: Manhole component joints factory formed for self-centering concrete to concrete bearing.

6. Manhole Component Design: Base, riser section and top section dimensions and diameters, not consistent with ASTM C 478, are as indicated on drawings.

B. Precast Bases and Riser Sections: Design, materials and construction as specified previously.

C. Precast Top Sections: Designs as required by Drawings, of materials and construction as specified previously except additional and differing requirements as follows:

1. Flat Slab Tops: Tops factory formed to properly accept and support required sump frame and cover and formed to join riser section in a matching joint. The slab tops shall be reinforced concrete as specified in Division 3 - Concrete.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect precast reinforced concrete manhole components in accordance with requirements of ASTM C 478 regarding repairable defects and defects subject to rejection by the Engineer.

3.02 PREPARATION

A. Keep pipe and manhole interiors cleared of debris as construction progresses.

B. Earthwork: Perform earthwork for manhole installation as previously specified in Section 02200 - EARTHWORK and according to the following:

1. Classification of Excavation: As specified in Section 02200 - EARTHWORK.

2. Backfill spaces outside manhole using backfill material as specified in Section 02200 - EARTHWORK.

3.03 MANHOLE CONSTRUCTION METHODS

A. Manhole Wall Erection: Provide precast reinforced concrete base, straight riser, and top sections necessary to construct complete manholes. Fit the different components together to provide tight jointing and true vertical alignment of steps.

1. For precast concrete manhole joints use Conseal CS-440 flexible watertight sealant. Install in accordance with manufacturer's recommendations, and join sections also in accordance with written instructions of manhole component manufacturer.

a. Prime joint surfaces if required by preformed sealing compound manufacturer.

b. If sealing compound is installed in advance of section joining leave exposed half of two piece protective wrapper in place until just prior to section joining.

c. Use preformed sealing compound as the sole element utilized in sealing section joints from internal and external hydrostatic pressure.

d. Following manhole section installation, trowel sealing compound surface smooth and flush with interior face of manhole

3.04 FIELD QUALITY CONTROL

A. General: Make a post construction visual inspection of manhole to insure compliance with the installation requirements specified herein.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02200 - EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The Contractor shall make all excavations of every description for the access roads, the support zone, parking areas, temporary facilities, drainage swales, and culvert installations in whatever substance encountered, and shall place and compact backfill to the dimensions and levels shown on the plans or as required by the Engineer. Work under this section includes excavation of all materials encountered, trenching, sheeting, shoring, dewatering, maintenance of excavation, backfill, fill, providing borrow, compaction, and grading. Before commencing any operation, all required grades and lines shall be staked out by a Land Surveyor licensed in the State of Indiana, hired by the Contractor, and approved by the ECC Trust. The Contractor shall provide all labor, material, equipment, and supervision to execute the work in strict accordance with these specifications and applicable drawings.

B. The Contractor's particular attention is directed to Section 02224 - FILL AND BACKFILL MATERIALS. Specific information is provided for stockpiling material onsite or offsite.

C. The Contractor is advised that lines and grades, as shown on plans and profiles, are subject to change. Although it is the intention to adhere to that which is shown in the plans, the ECC Trust reserve the right to make changes in lines and grades when such changes may be necessary or advantageous.

D. The excavation, dewatering, sheeting, and bracing shall be carried out in such a manner as to eliminate any possibility of undermining or disturbing the foundations of any existing structure or any work previously completed under this Contract, or as herein specified.

E. The Contractor shall fill or backfill all excavations as necessary as indicated on the Contract Drawings and as herein specified.

F. The Contractor shall verify all existing conditions and dimensions prior to commencing the work. Any discrepancies shall be immediately reported to the Engineer.

G. The Contractor shall examine the areas and conditions under which earthwork and site grading is to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. The Contractor shall not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

1.02 SITE INFORMATION

A. Existing grades and other site information shown on the applicable Contract Drawings are approximate. The ECC Trust do not guarantee that the grades shown will not vary from the actual site conditions. The Contractor must make his own field investigations to determine all conditions affecting the work to be done and materials needed and make his bid in sole reliance thereon.

1.03 PROTECTION

A. Extreme care shall be exercised to avoid existing trees, shrubs, facilities, construction, utilities, fences, and private property that are to remain and all necessary precautions taken to preclude damage to these items. Any damages to those items as a result of work performed by the Contractor shall be repaired by the Contractor at his own expense. The Contractor's particular attention is directed to Section 01395 - ENVIRONMENTAL CONTROL AND MAINTENANCE.

B. The Contractor shall contact utility agencies prior to the start of actual excavation. The Contractor shall obtain information from the proper sources and authorities concerning locations of all utilities within the scope of this work, in order that there will be no damage done to such utilities.

C. If and when encountered, utilities shall be supported and protected, and the Engineer shall be notified. Permanent existing utilities near the excavation and/or construction work shall be properly protected during construction work, and any damage to such permanent utilities shall be repaired by the Contractor without expense to the ECC Trust.

D. All utility services shall be supported by suitable means so that the services shall not fail when tamping and settling occurs. No separate item is provided for service supports and the Contractor must cover same in the unit price bid for construction.

E. Rules and regulations governing the respective utilities shall be observed. Active utilities shall be adequately protected from damage, and shall not be removed or relocated except as indicated or directed. Inactive and abandoned utilities

encountered in excavation and grading and operations shall be removed, plugged, or capped, as directed.

F. Preserving Survey Markers: Any existing property boundary markers, control points, and datum elevations markers or bench marks shall be preserved, and all such established survey points which are displaced or destroyed by the Contractor shall be replaced by the Contractor with all expenses for such replacement paid by the Contractor.

PART 2 - PRODUCTS

2.01 SAFETY REQUIREMENTS

A. The Contractor shall provide and maintain barricades, signs, lights, shelters, etc., required for the protection of personnel, materials, and property. Barricades, etc., shall conform with all codes and regulations, and shall be lighted at night with lanterns and reflectorized paint as directed or required for safety, and shall be removed upon completion of the Contract.

B. All work shall conform to Occupational Safety and Health Administration requirements.

C. Should damage or injury occur, the Contractor shall assume full responsibility and make good such damage or injury at no cost to the ECC Trust.

D. Banks may be sloped where space permits and as approved by the Engineer. The Contractor shall not slope the faces of excavations in lieu of providing shoring unless all the following conditions are met:

1. The excavation is less than 20 feet in depth.

2. There are no adjacent structures, roads, or pavements which the excavation will affect.

3. No equipment, or stored, or overlying material will affect the excavation.

4. Vibration from equipment, traffic, or blasting will not affect the excavation.

5. There will be no groundwater problem.

6. Operational considerations do not preclude laying back the slopes of the excavation.

2.02 SHEETING AND BRACING

A. The Contractor shall furnish, put in place, and maintain such sheeting, bracing, etc., as may be required to support the side of the excavation and to prevent any movement of earth which could in any way diminish the width of the excavation below that necessary for proper construction or otherwise injure persons in or about the work or endanger adjacent structures or delay the work.

B. Whenever possible, sheeting shall be driven ahead of the excavation to avoid loss of materials from behind the sheeting. If it is necessary to excavate below the sheeting, care shall be taken to avoid trimming behind the face along which the sheeting will be driven. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be filled immediately and compacted.

C. The materials for steel sheet piling shall conform to the requirement of ASTM-A328. Timber sheet piling shall conform to the requirements of AASHTO M.09.01-1. Materials, other than steel or timber, or a combination of these may be used provided they are properly designed for the purpose intended.

D. Before beginning operations relating to excavation within a sheeted enclosure, the Contractor shall submit to the Engineer, in triplicate, a detailed written description of the equipment and methods he proposes to use and acceptable computations and sketches as prepared by a registered professional engineer, retained by the Contractor, showing details of the sheeting enclosure. The Contractor shall not proceed with this work until authorized by the ECC Trust. The furnishing of such plans shall not serve to relieve the Contractor of any part of his responsibility for the safety of the work or the successful completion of the work.

E. Where work must be carried on in standing or running water, sheeting, sheetpiling, and bracing must be of such a nature as to form a watertight cofferdam driven to such a depth as to prevent injurious seepage through bottom.

G. All sheeting and bracing not to be left in place shall be carefully removed in such a manner as to not endanger the construction or other structures. All voids left or caused by withdrawal of sheeting shall be backfilled immediately with approved material and compacted (by ramming with tools especially adapted to that purpose, or by other means as may be approved).

2.03 SOIL, GRANULAR, AND RANDOM MATERIALS

A. Fill material including borrow material, bedding, subgrade material, topsoil, and filler material shall conform to the requirements for soil materials indicated in the Contract Documents.

PART 3 - EXECUTION

3.01 DESCRIPTION

A. The Contractor shall make excavations in such a manner and to such width as will give suitable room for installing the decontamination pad sump and culvert piping; shall furnish and place all sheeting, bracing, and supports; shall do all pumping and draining and any other work necessary for dewatering and shall render the bottom of the excavation firm and dry and in all respects acceptable.

B. Before commencing any operations, all required grades and lines shall be staked out by a land surveyor, licensed in the State of Indiana, hired by the Contractor and approved by the Engineer.

C. The Contractor shall protect temporarily unfinished work such as open trenches and excavations and newly graded areas from traffic and erosion and shall keep area free of trash and debris for the duration of the Contract.

D. The Contractor shall repair and re-establish grades in settled, eroded, and rutted areas to the required elevations, slopes, and tolerances.

3.02 EXCAVATED MATERIAL

A. The Contractor shall perform excavation of every type of material encountered within the limits of the project, to the lines, grades, and elevations indicated and as required. Grading shall be in conformity with the typical sections shown and the tolerances specified in Subparagraph 3.03.C - Finishing. Suitable excavated materials shall be transported to and placed in fill or embankment within the limits of the work as identified by the Engineer. Unsuitable material encountered within the limits of the work shall be excavated below grade and replaced with satisfactory material as directed. Such excavated material and the suitable material ordered as replacement shall be included in excavation. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

B. Excavated material shall be so placed as not to interfere with the occupants of adjoining property or cause undesirable settlement. Onsite excavated material shall not be deposited in streams or in areas subject to flooding.

C. It is expressly understood that no excavated materials shall be removed from the Site of the work or disposed of by the Contractor except as directed or approved by the Engineer or as noted below.

D. Suitable excavated material may be used for fill or backfill on other parts of the work. Suitable fill is defined in Section 02224 - Fill and Backfill Materials.

E. Upon completion of the backfilling, adjacent property shall be cleaned, surplus material removed, and the surfaces restored to their original condition.

F. When material satisfactory for backfilling and in quantities sufficient for those purposes is stockpiled during excavation, stockpiling shall be in an orderly manner at a location specified by the Engineer. The Engineer will specify stockpile locations so as to minimize interference with construction operations. If the Contractor fails to protect the stockpiles from excessive rainwater or other unsatisfactory excavated material and the stockpile becomes unsatisfactory as a result, such material shall be removed and replaced with satisfactory onsite or imported material from approved sources at no additional cost to the ECC Trust.

3.03 SUBGRADE

A. Subgrade for roadways and parking areas shall be prepared to line, grade, cross section, and compacted as specified. Soft or otherwise unsuitable material shall be removed and replaced with suitable excavated material. Low areas resulting from removal of unsuitable material shall be brought up to required grade with suitable materials, and the entire subgrade shall be prepared to line, grade, and cross section and compacted as specified. The elevation of the finished subgrade shall not vary more than 0.10 feet from the established grade and cross section.

B. Excavation to final grade of subgrade to support concrete shall not be made until just before concrete is to be placed. Unsuitable materials in surfaces to receive fill or in excavated areas shall be removed and replaced with suitable fill. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill materials will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted.

C. The surface of all excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for all graded areas shall be within 0.10 foot of the grades and elevations indicated. Gutters and ditches shall

be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials.

3.04 DRAINAGE

A. At all times during construction, the Contractor shall temporarily provide, place, and maintain ample means and devices with which to remove promptly, and dispose of as directed by the Engineer, all water entering trenches and other excavations, or water that may flow along or across the Site of the work; and keep said excavations dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be damaged. At this time, the Contractor shall remove such temporary means and devices.

B. All groundwater which may be found in trenches and excavations, and any water which may get into them from any cause whatsoever, shall be pumped or bailed out, so that the Site shall be dry during pipe laying, backfilling, and construction.

C. All water pumped or drained from the work shall be disposed of at the onsite 5,000-gallon wastewater storage tanker.

3.05 BACKFILLING GENERAL

A. In general, or unless other material is indicated on the Drawings or elsewhere specified, material used for backfilling trenches and excavations for or around structures shall be suitable fill which was removed in the course of making the construction excavations. Backfilling shall be done as promptly as is consistent without damage to the pipe or structures, but no backfilling shall be done before the Engineer gives permission.

B. Suitable fill material shall be free from cinders, ashes, refuse, boulders, rocks, or stones greater than 6 inches in any dimension, unsuitable organic material or other material which, in the opinion of the Engineer, is unsuitable shall not be used.

C. Frozen material shall not be placed in the backfill, nor shall backfill be placed upon frozen material. Previously frozen material shall be removed, or shall be otherwise treated as required, before new backfill is placed.

D. Delivered fill materials shall be stored in a manner to avoid contamination or segregation.

E. Prior to placement of fill, the surface of the subgrade shall be examined by the Engineer to determine the presence, if any, of ruts, disturbed ground, wet spots, soft areas, organic matter, or other features undesirable in a subgrade. Undesirable features shall be removed before placing fill. The surface shall then be scarified to a depth of 6 inches before the fill is started.

3.06 BACKFILLING AROUND STRUCTURES

A. No backfill shall be deposited against concrete until the concrete has obtained sufficient strength to withstand the earth pressure placed upon it and in no case less than 7 days, nor before carrying out and satisfactorily completing quality control tests. Compaction of backfill against concrete structures shall not be carried out by motorized equipment closer to structure than the depth of structure below grade.

B. The remainder of the excavation around the structure shall be backfilled in accordance with this section.

3.07 PLACING AND COMPACTING FILL

A. After the subgrade has been prepared as previously specified, the material shall be placed thereon and built up in successive layers until it has reached the required elevation.

B. Fill beneath structures shall conform to Indiana Department of Highways Standard Specifications and be placed in accordance with the Drawings.

C. Layers shall not exceed 6 inches in thickness beneath structures or 12 inches in nonstructural areas before compaction. The layers shall be slightly convex toward the center.

D. Each layer of material shall be compacted by the use of approved means so as to secure a dense, stable, and thoroughly compacted mass. At such points as cannot be reached by mobile, power-driven compaction equipment, or where such equipment is not permitted, the materials shall be thoroughly compacted by the use of their approved methods.

E. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions shall be taken as may be necessary to obtain proper compaction.

F. Heavy equipment for spreading and compacting backfill shall not:

1. Be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of the footing

2. Be permitted to operate over a buried structure until 2 feet of backfill have been placed, unless otherwise approved in writing by the Engineer.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02224 - FILL AND BACKFILL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

The Contractor shall coordinate with the Engineer the location of the NSL Borrow Area or any other borrow areas as necessary for fill and backfill material for site preparation and to meet finished contours as shown on the Drawings.

1.02 APPROVAL OF MATERIALS

In no case will material be used for "suitable fill" without the approval of the Engineer.

PART 2 - PRODUCTS

2.01 SUITABLE FILL

A. Suitable fill shall be a fine-grained material obtained from approved onsite natural deposits and unprocessed except for the removal of unacceptable material and stones larger than 6 inches in any dimension. It shall be free of topsoil, vegetation, roots, lumber, metal, refuse, coal waste, slag, and cinders.

B. Materials for suitable fill shall consist of a well-graded mixture of stones or rock fragments and particles with 95 to 100 percent passing the 3-inch sieve and 25 to 70 percent passing the No. 4 sieve. Suitable fill shall be used for nonstructural fill or pavement subgrade.

C. Suitable fill shall be obtained from the NSL Borrow Area or at another area as designated by the Engineer.

D. Surplus suitable fill shall be returned to the NSL borrow area.

PART 3 - EXECUTION

3.01 PLACING AND COMPACTING

A. The material shall be placed as specified in Section 02200 - EARTHWORK.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02280 - GEOTEXTILES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the procurement, transportation, storage, handling, seaming, and installation of geotextiles.

1.02 REFERENCES

A. ASTM D751 - Method of Testing Coated Fabrics.

B. ASTM D1117 - Method of Testing Nonwoven Fabrics.

C. ASTM D1682 - Test Method for Breaking Load and Elongation of Textile Fabrics.

D. ASTM D3787 - Test Method for Bursting Strength of Knitted Goods: Constant Rate of Traverse (CRT), Ball Burst Test.

E. ASTM D4157 - Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method).

F. ASTM D4158 - Test Method for Abrasion Resistance of Textile Fabrics (Uniform Abrasion Method).

G. Corps of Engineers - COE CW 02215 - Test Method for Equivalent Size - Opening.

1.03 SUBMITTALS

A. The Contractor shall supply the Engineer with product samples of all geotextiles.

PART 2 - PRODUCTS

2.01 GENERAL

A. Products shall be comprised of a continuous filament of chain polymeric material. Yarns will be formed into fabric from filaments, that are spun, bonded, and needle punched into a stable network to achieve the desired properties.

B. A nonwoven geotextile should be used to separate the existing ground surface from the aggregate layer in the access roads, support zone, and parking areas.

C. Products to be approved shall meet or exceed the following minimum specifications:

1.	Grab Tensile Strength, lbs. (ASTM D1682, 1 inch)	270
2.	Grab Tensile Elongation, %, (ASTM D1682)	15
3.	Burst Strength, psi (ASTM D751, Diaphragm Method)	430
4.	Puncture, lbs. (ASTM D3787, 5/16 inch Flatrod)	110
5.	Trapezoid Tear Strength, lbs. (ASTM D1117)	75
6.	Apparent Opening Size (AOS) Sieve No. (COE CW-02215)	≥ #70
7.	Abrasion Resistance, lbs. (ASTM D4157, D4158, and D1682)	40

PART 3 - EXECUTION

3.01 INSTALLATION

A. Geotextile procurement, transportation, storage, handling, seaming, and installation shall be the responsibility of the Contractor. Any damaged or unacceptable material shall be replaced at no additional cost to the ECC Trust. During shipping and storage, the geotextile shall be protected from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions. Geotextile rolls shall be shipped and stored in relatively opaque and watertight wrappings.

B. On slopes, the geotextiles shall be securely anchored and then rolled down the slope in such a manner as to continually keep the geotextile sheet in tension.

C. Geotextiles shall be weighted with sandbags or other approved method which will remain until replaced with cover material.

D. Necessary precautions should be taken to prevent damage to underlying layers during placement of the geotextile.

E. Geotextiles shall not be exposed to precipitation prior to being installed, and shall not be exposed to direct sunlight for more than 15 days (unless otherwise approved by the Engineer).

F. Particular attention should be paid to seams and overlaps to insure that no cover material is inadvertently inserted beneath the geotextile.

G. All sewing shall be done using polymeric thread with properties equal to or exceeding those of the geotextile.

H. Place all cover materials in such a manner to insure that the geotextile is not damaged, there is minimal slippage of the geotextile or underlying layers, and no excess tensile stresses are present in the geotextile.

I. No construction equipment shall operate on exposed geotextiles.

3.02 REPAIRS

A. Holes or tears in the fabric shall be repaired as follows:

1. A patch with 3 feet overlap in all directions will be placed on the tear.

2. If tear exceeds 20 percent of roll width, that roll will be replaced.

3.03 QUALITY CONTROL

A. Visual inspections of shipment and storage activities shall be made to assure that the fabric has been protected from ultraviolet light exposure, precipitation or other inundation, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions.

B. Include within CQC Plan a quality control section which demonstrates conformance with these Specifications.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02500 - ACCESS ROADS, SUPPORT ZONE, SUPPLEMENTAL STORAGE AREA, AND PARKING AREAS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of installing and maintaining aggregate surfaces for the access roads, support zone, supplemental storage area, parking areas, and other working surfaces onsite.

1.02 REFERENCES

A. Indiana Department of Highways, Standard Specifications, 1988.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Surface Course:

1. The surface course materials for this item shall be an aggregate with no particles greater than 1 1/2 inches. The material shall have a gradation and quality equal to Indiana Department of Highways Material Number 53 as defined in the Standard Specifications.

B. Base Course:

1. The base course materials for this item shall be an aggregate with no particles greater than 2 1/2 inches. The material shall have a gradation and quality equal to Indiana Department of Highways Material Number 2 as defined in the Standard Specifications.

C. Geotextile:

1. The geotextile for this item shall be chosen by the Contractor, and it shall meet the requirements of Section 02280 - GEOTEXTILES.

PART 3 - EXECUTION

3.01 Access Roads, Support Zone, Supplemental Storage Area, and Parking Areas:

A. The Contractor shall clear the areas to be surfaced in accordance with Section 02115 - SITE CLEARING.

B. The Contractor shall place the geotextile on the cleared areas prior to stone placement to act as a separation layer. The geotextile shall be placed in accordance with Section 02280 - GEOTEXTILES.

C. The Contractor shall place a minimum of 8 inches of the IDOH Number 2 aggregate over the areas shown on the Drawings for the access roads, support zone, and parking areas.

D. The IDOH Number 2 aggregate shall be compacted by a minimum of three passes with a smooth drum vibratory compactor with a minimum total dynamic force of not less than 20,000 pounds, or as approved by the Engineer.

E. Areas having large losses of aggregate due to adverse soil conditions or storm runoff shall have material added and compacted until a firm base is achieved.

F. The Contractor shall place a minimum of 4 inches of the IDOH Number 53 aggregate over top of the IDOH Number 2 aggregate.

G. The IDOH Number 53 aggregate shall be compacted by a minimum of three passes with a smooth drum vibratory compactor with a minimum total dynamic force of not less than 20,000 pounds, or as approved by the Engineer.

H. Any spillage of waste material on the aggregate surfaces shall be immediately cleaned up by the Contractor, if necessary by excavation of the contaminated aggregate and replacement by clean material. All contaminated aggregate shall be placed in the onsite solid hazardous rolloff container. As the onsite solid hazardous rolloff nears capacity, it shall be transported to an approved offsite solid hazardous disposal facility in accordance with Section 02900 - OFFSITE TRANSPORTATION AND DISPOSAL.

I. At the completion of work, the Contractor shall leave the access roads, support zone, supplemental storage area, and parking areas in place.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02700 - EROSION CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item includes erosion and sediment control products and measures to be used during site preparation and material removal activities. The purpose is to ensure that grading and construction activities will not adversely affect adjacent properties or water resources.

1.02 REFERENCES

A. ASTM D751 - Method of Testing Coated Fabrics.

B. ASTM D1682 - Test Method for Breaking Load and Elongation of Textile Fabrics.

C. ASTM D3786 - Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method.

D. ASTM G26 - Practice for Operating Light Exposure Apparatus (Xenon Arc Type) With and Without Water for Exposure of Non-Metallic Materials.

E. Corps of Engineers - COE CW 02215 - Test Method for Equivalent Size - Opening.

F. Indiana Department of Highways, Standard Specifications, 1988.

1.03 SUBMITTALS

A. The Contractor shall supply the Engineer with a product sample of the silt fence fabric.

PART 2- PRODUCTS

2.01 SILT FENCE

A. Silt Fence Fabric shall meet or exceed the following minimum specifications:

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (psi)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (Modified)
Equivalent Opening Size	40 - 80	US Standard Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM-G-26

B. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood.

C. Prefabricated Units: Envirofence or equal may be used in lieu of the above method providing the unit is installed per manufacturer's instructions.

2.02 RIPRAP

A. Geotextile Fabric Underlayment:

1. Riprap underlayment fabric shall be as specified in Section 02280 - GEOTEXTILES.

B. Riprap:

1. Stone for riprap protection shall consist of field rock or rough, unhewn quarry rock as nearly uniform in section as practicable. The rock shall be dense, resistant to the action of air and water and suitable in all respects for the purpose intended. Stone for riprap shall be of the size and weight specified in the following table:

Maximum Stone Dimension (inches)	Percent Smaller Than Given Size (by weight)
15	60 - 100%
12	40 - 70%
6	0 - 20%

2.03 VEGETATION

A. Seeding, Fertilizer, and Mulch:

1. Seeding, fertilizer, and mulch shall be as specified in Section 02710 - Vegetation.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall plan and execute construction by methods which will minimize and control surface drainage so as to reduce erosion and sedimentation to least practicable amounts. To accomplish this objective, the following measures shall be utilized as appropriate:

1. Expose the least possible amount of bare soils at any one time.

2. Use selective placement of fill during construction to avoid entrapment of ponds of rainwater and excessive erosion.

3. Make daily inspections for erosion and sedimentation, and take corrective actions as necessary.

3.02 SILT FENCE

A. Silt fence fabric shall be placed on the top of the banks of regraded or disturbed ditches at the toe of all graded slopes, and on the downslope ends of all access or temporary haul roads outside of the support zone.

B. Inspect all slopes and drainage ditches to insure that the topsoil is well graded and free of large stones or other debris that would prevent the fabric from conforming closely to the soil.

C. Fabric shall be installed immediately after seeding operations have been completed in work areas.

D. Fabric shall be applied in accordance with the manufacturer's recommendations.

3.03 GEOTEXTILE UNDERLAYMENT FABRIC

A. Riprap underlayment installation shall be as specified in Section 02280 - Geotextiles.

3.04 RIPRAP

A. Stone for riprap shall be placed on the underlayment fabric in such a manner as to produce a reasonably well-graded mass of rock with the minimum practicable percentage of voids, and shall be constructed within the specified tolerance to the lines and grades shown on the contract drawings. Riprap shall be placed to its full course thickness in one operation and in such a manner as to avoid puncturing the underlayment fabric or displacing the previously installed stone. The larger stones shall be well distributed and the entire mass of stones in their final position shall conform to the specified gradation.

B. A tolerance of plus 6 inches or minus 0 inches from the slope lines and grades shown on the contract drawings will be allowed in the finished surface of the riprap.

C. The finished riprap shall be free from objectionable pockets of small stone, sand clusters, or larger stones. Placing riprap in layers will not be permitted. Placing riprap by dumping from the top of slope, dumping into chutes, or other methods likely to cause segregation of the various sizes of stones throughout the mass shall not be permitted. Riprap shall be placed by methods that will obtain a reasonably well graded distribution of stone sizes as specified. Contractor will maintain the riprap protection until accepted and any material displaced by any cause shall be replaced to the lines and grades shown on the contract drawings.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02710 - VEGETATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Seeding, mulching, and fertilizer.

B. Maintenance.

1.02 REFERENCES

A. FS 0-F-242 - Federal Specifications for Fertilizers, Mixed, Commercial.

B. Indiana Department of Highways (IDOH) Standard Specifications, 1988.

1.03 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.04 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 - PRODUCTS

2.01 SEED SUPPLIERS

A. Indiana Seed Co. or others as approved by the Engineer.

2.02 SEED MIXTURE

A. Seed Mixture: Indiana Seed Company Number Six Rough Mix

1. Kentucky Blue Grass: 10 percent.

2. Perennial Rye: 25 percent.

3. Tall Fescue Grass: 65 percent.

2.03 SOIL MATERIALS

A. Topsoil:

1. Excavated and reused material, graded, free of roots, rocks larger than 1/2 inch (12 mm), subsoil, debris, large weeds and foreign matter; conforming to ASTM D2487 Group Symbol OH or PT.

2. Imported friable loam; reasonably free of roots, rocks larger than 1/2 inch (12 mm), subsoil, debris, large weeds, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent inorganic matter; conforming to ASTM D2487 Group Symbol OH or PT.

2.04 ACCESSORIES

A. Mulching Material:

1. Mulch for seeded areas with finished slopes flatter than three horizontal to one vertical shall be in accordance with IDOH 913.05(a).

2. Mulch for seeded areas with finished slopes of 3 horizontal to 1 vertical or steeper shall be in accordance with IDOH 913.05(c), (d), or (e).

B. Fertilizer: FS O-F-241, Type I, Grade A; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated in analysis to the following proportions: Nitrogen - 12 percent, phosphoric acid - 12 percent, soluble potash - 12 percent.

C. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

D. Stakes: Softwood lumber, chisel pointed.

E. String: Organic fiber.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this section.

3.02 FERTILIZING

A. Applying fertilizer in accordance with manufacturer's instructions, at a rate of 23 pounds per 1,000 square feet.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into 2 inches (50 mm) of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.03 SEEDING

A. Apply seed at a rate of 4 pounds per 1,000 square feet evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Planting Season: March 1 through October 15.

D. Do not sow immediately following rain, when ground is too dry, or during high wind periods.

E. Roll seeded area with roller not exceeding 112 pounds (50 Kg).

F. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches (3 mm). Maintain clear of shrubs and trees.

G. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches (100 mm) of soil.

3.04 SEED PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 6 inches.

3.05 MAINTENANCE

A. Mow grass at regular intervals as necessary during the project, to maintain at a maximum height of 4 inches. Do not cut more than 1/3 of grass blade at any one mowing.

B. Water to prevent grass and soil from drying out.

C. Immediately reseed areas which show bare spots and water to prevent washing of slopes or dislodgement of seed.

D. Fertilize seeded area at a rate of 10 pounds per 1,000 square feet immediately following the first mowing.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02800 - FENCES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the furnishing and installation of the Site Security Fence, Exclusion Zone Fence, and Temporary Construction Fence.

1.02 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM) Publication:

a. A 120-84: Pipe, Steel, Block and Hot Dipped Zinc-Coated Galvanized, Welded, and Seamless, for Ordinary Uses.

b. A 153-82: Zinc Coating (Hot Dip) on Iron and Steel Hardware.

c. C 94-86b: Ready-Mixed Concrete

PART 2 - PRODUCTS

2.01 MATERIALS

A. Site Security Fence (Chainlink):

1. Fabric shall be 9-gage galvanized wire woven in 2-inch mesh. Fabric height shall be 8 feet.

2. Gates shall be of the type and size shown. Gate frames shall be constructed of 2-inch, Schedule 40 zinc coated steel pipe with welded joints. Gate fabric shall be as specified above. Vertical members of gate leaves shall be spaced so that no members are more than 8 feet apart. Gates over 10 feet wide shall be additionally braced with a 5/16-inch, minimum thickness, diagonal truss rod. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted. Latches, hinges, stops, keepers, rollers,

and other hardware items shall be furnished as required for the operation of the gate. Latches shall be arranged for padlocking so that padlock will be accessible from both sides of the gate regardless of the latching arrangement.

3. Posts (ASTM 120-79): Posts shall be zinc-coated Schedule 40 steel pipe. Sizes shall be as shown on the Drawings. Line posts shall be of the same class throughout the fence. Terminal (corner, gate, and pull) posts selected shall be of the same class throughout the fence.

4. Braces shall be zinc-coated steel pipe.

5. Accessories: Ferrous accessories shall be zinc-coated as per ASTM A-153.

   a. Truss rods shall be furnished for each terminal post. Truss rods shall be provided with turnbuckles or other equivalent provisions for adjustment.

B. Exclusion Zone Fence (Chainlink):

1. Fabric shall be 9-gage galvanized wire woven in 2-inch mesh. Fabric height shall be 6 feet.

2. Frame sections to be 10 feet long constructed of 1 5/8-inch O.D. tubing galvanized inside and outside.

3. Fence sections to be attached using at least one 1 5/8 inch x 1 5/8 inch saddle clamp with bolt between each section maintaining a 1 inch space.

4. Fence section supports to be placed in a pre-case concrete block 23 inches x 9 inches x 5 inches with two holes able to receive the fence posts and keep the fence in an upright and stable manner.

C. Temporary Construction Fence (High Visibility)

1. Fabric shall be Tenax ALPI™ construction fencing or its performance equivalent.

2. Fabric shall be 4 feet in height.

3. Fabric color shall be high visibility orange.

4. Fabric shall be hung on steel piping or its performance equivalent, of appropriate size in order to maintain the fence in an upright and secure manner.

5. The Contractor shall utilize aluminum wire ties of sufficient gauge, or its performance equivalent, and quantity in order to maintain the fence in an upright and secure manner while affixed to the fence posts.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Site Security Fence:

1. Fence shall be installed to the lines and grades indicated. The area on either side of the fence line shall be cleared as needed to install the fence. Posts shall be spaced equidistant at intervals not exceeding 10 feet. Terminal (corner, gate, and pull) posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 500 feet.

2. Posts shall be set plumb and in alignment. Posts shall be set in concrete to the depth of 36 inches. Concrete shall have a 28-day compressive strength of 4,000 psi. Concrete shall be thoroughly consolidated around each post so as to be free of voids and finished to form a dome. Concrete shall be allowed to cure for 72 hours prior to attachment of any item to the posts.

3. Top rail shall be supported at each post in a manner that a continuous brace between terminal posts is formed. Where required, sections of top rail shall be joined using sleeves or couplings that will allow expansion or contraction of the rail.

4. Braces and truss rods shall be installed as required and in conformance with the standard practice for the fence furnished. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal.

5. Chainlink fabric shall be installed on the side of the post facing away from the Site. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 15-inch intervals. Fabric shall be pulled taut to provide a smooth uniform appearance free from sag. Fabric shall be fastened to line posts at approximately 18-inch

intervals and fastened to top rails and tension wires at approximately 18-inch intervals. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be 2 inches (plus or minus 1/2 inch) aboveground.

6. Gates shall be installed at the locations shown. Hinged gates shall be mounted to swing as indicated. Latches, stops, and keepers shall be installed as required. Padlocks shall be attached to gates or gate posts with chains to prevent padlock removal.

B. Exclusion Zone Fence:

1. Fence shall be installed as per manufacturer's recommendation under direction of the Engineer, and at the location indicated on the Drawings. The area on either side of the fence line shall be cleared as needed to install the fence.

2. The fence shall be maintained in an acceptable manner to the Engineer.

C. Temporary Construction Fence:

1. The fence location shall be placed as per drawing Number C-2 along the west edge of the diversion ditch under direction of the Engineer.

2. The fence posts shall not stand higher than the fence when in place.

3. Fence posts shall be placed between 5 and 7 feet apart.

4. The fence shall be installed as per manufacturers specifications, or by direction of the Engineer.

5. The Contractor shall maintain the fence in an acceptable manner to the Engineer.

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02900 - OFFSITE TRANSPORTATION AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the requirements for Offsite Transportation and Disposal associated with site preparation and material removal activities.

B. The Contractor shall obtain and pay for all transportation-related liability insurance, and all Federal, state, and local permits and licenses required.

1.02 OFFSITE DISPOSAL FACILITIES

A. Solid Hazardous Waste Disposal Facilities:

1. All solid hazardous waste shall be disposed of at a RCRA permitted disposal facility in the United States. The Contractor shall select two RCRA permitted facilities which it intends to use for the transportation to and disposal of solid hazardous waste from this Site. The Contractor shall cite which of the facilities will be the primary facility and which will be the secondary facility.

2. All of the solid hazardous waste disposed from this Site will be transported to and disposed of in the primary solid hazardous waste disposal facility unless that facility becomes "out of compliance" with present RCRA requirements. In this event, the Contractor shall transport the waste to the secondary disposal facility for disposal.

3. If the primary facility becomes compliant during the course of the transportation and disposal to the secondary disposal facility, the Contractor shall redirect the waste to the primary disposal facility.

4. The Contractor may use the following RCRA permitted solid hazardous waste disposal facility or the Contractor may select its own disposal facility meeting the requirements of these specifications and approval of the Engineer.

a. Chemical Waste Management, Inc.
Adams Center Facility
Fort Wayne, Indiana

5. The Contractor shall ensure that all wastes are properly manifested for transportation and disposal and comply with all Federal and state laws and regulations concerning waste transportation and disposal. The ECC Trust shall be responsible for obtaining the generator identification number from U.S. EPA prior to offsite shipment.

B. Solid Nonhazardous Waste Disposal Facilities:

1. All solid nonhazardous waste shall be disposed of at an approved IDEM permitted municipal solid waste landfill in the United States. The Contractor shall select two approved landfills which it intends to use for the transportation and disposal of solid nonhazardous waste from this Site. The Contractor shall cite which of the landfills will be the primary landfill and which will be the secondary landfill.

2. All of the solid nonhazardous waste disposed from this Site will be transported to and disposed of in the primary landfill unless that facility becomes "out of compliance" with present requirements. In this event, the Contractor shall transport the waste to the secondary landfill.

3. If the primary landfill becomes compliant during the course of the transportation and disposal to the secondary landfill, the Contractor shall redirect the waste to the primary landfill.

4. The Contractor may use the following approved IDEM permitted municipal solid waste landfill or the Contractor may select its own landfill meeting the requirements of these specifications and approval of the Engineer.

   a. Waste Management, Inc.
   Danville Recycle and Disposal Facility
   Danville, Indiana

5. The Contractor shall ensure that all wastes are properly manifested for transportation and disposal and comply with all Federal and state laws and regulations concerning waste transportation and disposal.

C. Liquid Hazardous Waste Disposal Facilities:

1. All liquid hazardous waste shall be disposed of at a RCRA permitted disposal facility in the United States. The Contractor shall select two RCRA permitted facilities which it intends to use for the transportation to and disposal of liquid hazardous waste from this Site. The Contractor shall cite which of the facilities will be the primary facility and which will be the secondary facility.

2. All of the liquid hazardous waste disposed from this Site will be transported to and disposed of in the primary liquid hazardous waste disposal facility unless that facility becomes "out of compliance" with present RCRA requirements. In this event, the Contractor shall transport the waste to the secondary disposal facility for disposal.

3. If the primary facility becomes compliant during the course of the transportation and disposal to the secondary disposal facility, the Contractor shall redirect the waste to the primary disposal facility.

4. The Contractor may use the following RCRA permitted liquid hazardous waste disposal facilities or the Contractor may select its own disposal facility meeting the requirements of these specifications and approval of the Engineer.

   a. Heritage Environmental Services, Inc.
   7901 West Morris Street
   Indianapolis, Indiana 46231

   b. Clean Harbors
   Chicago, Illinois

5. The Contractor shall ensure that all wastes are properly manifested for transportation and disposal and comply with all Federal and state laws and regulations concerning waste transportation and disposal. The ECC Trust shall be responsible for obtaining the generator identification number from U.S. EPA prior to offsite shipment.

D. Scrap/Salvage Disposal Facilities:

1. All material certified clean including tanks and metallic structural material shall be disposed of at a scrap/salvage disposal facility in the United States. The Contractor shall select two facilities which he intends to use for the transportation to and disposal of certified clean material. The Contractor shall cite which of the facilities will be the primary facility and which will be the secondary facility.

2. All of the certified clean material disposed from this Site will be transported to and disposed of in the primary scrap/salvage disposal facility unless that facility becomes "out of compliance" with present requirements. In this event, the Contractor shall transport the waste to the secondary disposal facility for disposal.

3. If the primary facility becomes compliant during the course of the transportation and disposal to the secondary disposal facility, the Contractor shall redirect the waste to the primary disposal facility.

4. The Contractor may use the following approved scrap/salvage disposal facilities or the Contractor may select his own scrap/salvage disposal facilities meeting the requirements of these Specifications and approval of the Engineer.

   a. Oscar Winsky Company, Lafayette, Indiana.

   b. Lusco Corporation, Indianapolis, Indiana.

5. The Contractor shall ensure that all material certified clean is properly manifested for transportation and disposal and complies with all Federal and State laws and regulations concerning transportation and disposal.

1.03 SUBMITTALS

A. Copies of certificates of required insurance, permits, and licenses.

B. Offsite spill contingency plan.

C. During the course of the Contract, the Contractor shall submit as documentation for each payment the following:

1. Copies of weigh-in/weigh-out tickets, with driver name, truck identification, date and time of day.

2. Copies of manifests.

D. Weigh scale certification.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.01 DRIVER TRAINING

A. The Contractor shall provide an instructional briefing meeting for all drivers and transportation subcontractors before work begins. The meeting shall cover the following topics at a minimum:

1. Onsite routing.

2. Weighing and weight tickets.

3. Procedures for cargo compartment lining, tarping, and decontamination.

4. Health and safety including respiratory requirements.

B. The Contractor shall prepare a written record of this meeting. Duplicates of meeting record shall be given to each driver upon their first check-in at the Site.

3.02 NOTIFICATION OF DISPOSAL FACILITY

A. The Contractor shall implement procedures and designate personnel to notify disposal facilities upon departure of each transport vehicle from the site supplying the following information as a minimum:

1. Driver Name.

2. Truck Identification.

3. Designation of materials contained in load.

4. Estimated time of arrival at disposal facility.

3.03 DEMURRAGE

A. Transportation demurrage costs during loading at the Site and at the disposal facilities shall be borne by the Contractor and are not a cost reimbursed by the ECC Trust.

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03200 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and install all concrete reinforcement as shown on the Drawings and specified herein.

1.02 RELATED WORK NOT INCLUDED

A. Concrete is included in Section 03300.

1.03 REFERENCE STANDARDS

A. Steel reinforcement in concrete shall conform to ACI 350 and ACI 318 unless otherwise specified herein.

1.04 PRODUCT DELIVERY AND HANDLING

A. Reinforcing shall be substantially free from mill scale, rust, dirt, grease, or other foreign matter.

B. Reinforcement shall be shipped and stored with bars of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as shown on the submitted placing drawings.

C. Reinforcing steel shall be stored off the ground and shall be protected from moisture and kept free from dirt, oil, or injurious contaminants.

1.05 SUBMITTALS

A. Manufacturer's Certification of Product.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall be new, be of domestic manufacturer, and shall conform to the following material specifications.

1. Concrete reinforcing bars: ASTM A 615, Grade 60.

2. Welded steel wire fabric: ASTM A 185.

3. Plastic protected bar supports: CRSI Bar Support Specifications, Class 1 - Maximum Protection.

4. Precast concrete block bar supports: CRSI Bar Support Specifications, Precast Blocks with Wires.

5. Tie wires for reinforcement: 16-/12-gauge or heavier, black annealed wire.

B. The following alternate materials are allowed:

1. ASTM A 616 (rail-steel), Grade 60 deformed bars for ASTM A 615 (Billet-Steel) deformed bars.

2. ASTM A 617 (Axle-steel) Grade 60 deformed bars (Billet-steel), Grade 60.

2.02 FABRICATION OF REINFORCEMENT

A. Fabrication tolerances shall be in accordance with the CRSI, Code of Standard Practice-Fabrication.

B. Bars shall be cold bent.

C. Bars shall be bent around a revolving collar having a diameter of not less than that recommended by the CRSI, Code of Standard Practice-Detailing. Hooks shall conform to the same code.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Surface condition, bending, spacing, tolerances of placement of reinforcement shall conform to the CRSI, Code of Standard Practice-Field Erection.

B. Except as otherwise indicated on the Drawings, the minimum concrete cover of reinforcement shall be as follows:

1. Concrete cast against and permanently exposed to earth; 3-inch.

2. Concrete surfaces in contact with soil, water, sewage, sludge, or exposed to the weather; 2-inch.

3. Concrete surfaces not in contact with soil, water, sewage, sludge or exposed to the weather.

Beams, girders, columns: principal reinforcement; ties; stirrups or spirals; 1-1/2-inch.

Walls and bottom steel of slabs - 1 inch.

Shells and top steel of slabs - 3/4-inch.

C. Reinforcement which is to be exposed for a considerable length of time after being placed shall be painted with a heavy coat of neat cement slurry, if required by the Engineer.

D. No reinforcing bars shall be welded either during the fabrication or erection unless specifically called for on the Drawings, specified herein, or with prior written approval of the Engineer. All bars that have been welded, including tack welds, without such approval shall be immediately removed from the work. When welding of reinforcement is approved, it shall conform to the AWS Structural Welding Code-Reinforcing Steel, AWS D1.4.

3.02 REINFORCEMENT AROUND OPENINGS

A. Place an equivalent area of steel to that interrupted by an opening, pipe penetration, or duct penetration around the opening or penetration. The bars shall have sufficient length to develop bond at each end beyond the opening or penetration.

3.03 SPLICING

A. Except as otherwise indicated on the Drawings, compression embedment and lap splices shall be 30 diameters, but not less than 12 inches. The lap splice length for column vertical bars shall be based on the bar size in the column above.

B. Except as otherwise indicated on the Drawings, tension lap splices shall be in accordance with the applicable tables on the ACT 315 Detailing Manual. Class B splices shall be used when 50 percent or less of the bars are spliced within the required lap length, otherwise Class C splices shall be used.

C. Except as otherwise indicated on the Drawings, splices in circumferential reinforcement in circular walls shall be Class C splices. Adjacent bars shall not be spliced within the required lap length.

D. Splices in reinforcement for tension tie members and hangers shall be welded to develop in tension at least 125 percent of the specified yield strength of a bar. Splices adjacent bars shall be offset the distance of a Class C splice. Splicing of bars in tension tie members and hangers shall be avoided whenever possible.

E. Splices in welded wire fabric shall be lapped not less than 1-1/2 courses or 12-inch. Fabric splices shall be tied together with wire ties spaced no more than 24-inch on center.

3.04 ACCESSORIES

A. The Contractor is solely responsible for determining, providing, and installing accessories such as chairs, chair bars, and the like in sufficient quantities and strength to adequately support the reinforcement and prevent its displacement during the erection of the steel and the placement of concrete.

B. Precast concrete blocks with wires shall be used where the reinforcing steel is to be supported over soil.

C. Stainless steel protected bar supports shall be used to firmly hold vertical reinforcement in position.

D. Precast concrete blocks with wires or plastic protected bar supports shall be used to support reinforcing steel on formwork. If the bottom of the precast blocks will be exposed to offer removal of forms, the color and appearance of the block shall match that of the adjacent concrete.

E. Alternate method of supporting top steel in slabs, such as steel channels supported on the bottom steel or vertical reinforcing steel fastened to the bottom and top mats, may be used if approved by the Engineer.

3.05 INSPECTION

A. In no case shall any reinforcing steel be covered with concrete until the amount and position of the reinforcement has been checked by the Engineer and his permission given to proceed with the concreting. The Engineer shall be given ample prior notice of the availability of set reinforcement for checking.

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03250 - CONCRETE JOINT ACCESSORIES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and install, complete, the permanent accessories for concrete joints as shown on the Drawings and specified herein to minimize groundwater leakage into the structure, to allow for the expansion and contraction of the structure and to protect the concrete joints from damage.

1.02 RELATED WORK NOT INCLUDED

A. Concrete and non-shrink grout is included in Section 03300 - CAST-IN-PLACE CONCRETE.

B. Concrete finishes are included in Section 03350 - CONCRETE FINISHES.

1.03 SUBMITTALS

A. Submittals shall be in accordance with Section 01300 - SUBMITTALS.

B. The following technical information shall be submitted for review prior to their installation.

1. Catalog cuts for all products

2. Additional product information and/or samples as requested by the Engineer to determine their conformance with the specifications.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Sealants shall be stored in unopened containers, under cover, in a cool dry place.

B. Plastic products shall be stored in a cool dry place out of direct sunlight.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Waterstops

1. Plastic waterstops shall be extruded from an elastomeric plastic compound with virgin polyvinylchloride as the basic resins. The compound shall contain no reprocessed materials. The waterstops shall meet the performance criteria in the Corps of Contracting Officers Specification CRFD-C-572. Waterstops shall be any of the following types or as shown on the Drawings.

   a. Dumbbell type waterstops for expansion joints shall be 9-inch by 3/8 inch with a center bulb. The waterstop shall be Horn/Durajoint type DB-6 by A.C Horn, Cat. No. D89-38 by Vinylex Corp., Style 753 by Greenstreak Plastic Products or equal. Dumbbell waterstops for joints shall be 6-inch by 3/8-inch. The waterstops shall be Horn/Durajoint Type DB-2 by A.C. Horn, Cat. No. D6-38 by Vinylex Corp., Style 748 by Greenstreak Plastic Products, or equal.

   b. Flat ribbed type waterstops for expansion joints shall be 9-inch by 3/8-inch with a center bulb. The waterstop shall be Horn/Durajoint Type 7C by A.C Horn, RLB90-38 by Vinylex Corp. or equal. Flat ribbed waterstops for joints shall be 6-inch by 3/8-inch. The waterstops shall be R6-38T by Vinylex Corp., 783 by Greenstreak Plastic Products, or equal.

   c. Wire reinforced flat ribbed waterstops for expansion joints shall be 9-inch by 3/8-inch with a center bulb. The waterstop will be CR-9380 by Paul Murphy Plastic Company or equal. Wire reinforced flat ribbed waterstops for other joints shall be 6-inch by 3/8-inch. The waterstop shall be FH-6380 or equal.

   d. Labyrinth waterstop shall be 3-1/4 inch by 1-5/8 inch size, Style 789 as manufactured by Greenstreak Plastic Products Co., equal by Water Seals, Inc. or equal.

B. Sealant

1. Sealants for manholes shall be Vulkem 107 high solids content, polyurethane waterproofing membrane manufactured by Mameco International, Inc., Cleveland, Ohio.

C. Precast Joint Sealants

1. See Section 2601 - Collection Sumps.

PART 3 - EXECUTION

3.01 INSTALLATION

A. PVC waterstops shall be spliced and/or joined in conformity with the manufacturer's recommendations to form a continuous seal along the joints and at intersections. The finished splices and connections shall have a tensile strength of not less than 80 percent of the unspliced section. The splices and connections shall not be subjected to any force for 10 minutes after making the splice or connection. Where the waterstop is discontinuous at the top of walls, it shall be terminated 2 inches from the top surface unless otherwise detailed on the Drawings.

B. Each side of the PVC dumbbell, flat ribbed or wire reinforced flat ribbed waterstop shall be tied to the reinforcement at least 12 inch on center for horizontal joints and at least 18 inch on center for vertical joints to prevent displacement during the concreting operations. Dumbbell water stops shall be secured by slips manufactured for that purpose. Wire reinforced flat ribbed waterstops shall be secured by typing to the projecting wire reinforcing. Flat ribbed waterstops shall be secured by passing the tie wired through punched or drilled holes between the first and second rib on each side. Center hub type waterstops shall be installed with the center bulb centered in the joint. Waterstops without center bulbs shall be positioned with midpoint of the waterstop centered on the joint. Care shall be taken to place the concrete equally on each side of vertically oriented waterstops without distorting or displacing the waterstop. Concrete shall be placed under horizontally oriented waterstops and shall be completely visually checked for continuous contact with the concrete without entrapment of air before concrete is placed on the top side of the waterstops. Waterstops in vertical joints shall be held rigid by split bulkhead forms.

C. PVC surface type waterstops need only to be held in position by the joint form. Care shall be taken to prevent concrete from getting behind the waterstop.

D. Install labyrinth water stops in accordance with the manufacturer's instructions.

E. Joint fillers shall be attached to the concrete with a bonding agent compatible with the joint sealant and joint filler. All installations shall be in accordance with the manufacturer's recommendations. Premolded filler shall be precut to butt tightly against the waterstop if present and to leave the recess detailed on the Drawings for sealant. All butt splices shall be taped to prevent intrusion of the second concrete placement into the filler joint.

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to place all concrete, reinforcing steel, forms, waterstops, grouting of base and bearing plates, electrical dust encasement, and miscellaneous related items including sleeves, reglets, anchor bolts, inserts, and embedded items specified under other sections.

1.02 RELATED WORK NOT INCLUDED

A. Concrete reinforcement is included in Section 03200 - CONCRETE REINFORCEMENT.

B. Concrete finishes are included in Section 03350 - CONCRETE FINISHES.

C. Joints accessories are included in Section 03250 - CONCRETE JOINT ACCESSORIES.

1.03 DESCRIPTION

A. Concrete shall be of Portland cement, fine aggregate, coarse aggregate, water, and admixtures as specified and shall be ready-mixed, or transit-mixed concrete produced by a plant acceptable to the Engineer. All constituents, including admixture, shall be batched at the central batch plant.

B. Reinforced concrete shall conform to ACI Specification 318.

C. All testing and inspection services required will be provided by a laboratory selected by the Contractor and approved by the Engineer. Cost of such work will be paid for by the Contractor. Methods of test will comply in detail with the latest applicable ASTM Methods of Test.

D. Samples of constituents and of concrete as placed will be subjected to laboratory tests. All materials incorporated in the work shall conform to approved samples.

1.04 QUALITY ASSURANCE

A. The actual acceptance of aggregates and development of mix proportions to produce concrete conforming to the specific requirements shall be determined by means of prior laboratory tests made with the constituents to be used on the work.

B. Well in advance of placing concrete, the Contractor shall discuss with the Engineer the proposed source of materials and concrete mixture which he proposes to use. He shall furnish samples of aggregate and cement for testing, deliver them to the laboratory selected, and shall permit ample time for the laboratory to develop a proposed design mix or to modify the design of the mix within the limits of these specifications.

C. The following limiting strengths, water-cement rations and cement factors shall apply.

TABLE A

Minimum Comp. Str. psi at 28 days	Maximum Net Water Content gals/100 lbs*	Minimum Cement Factor 100 lbs/cu yd**
2500	7.4	4.3
3500	6.4	5.2

* Maximum; decrease if possible. This represents total water in mix at time of mixing, including free water on aggregates, and water in admixture solution.

** Minimum; increase as necessary to meet other requirements. These cement factors apply to "controlled" concrete subject to specific inspection.

When high-early-strength Portland cement is permitted, the same strength requirements shall apply except that the indicated strengths shall be attained at 7 days instead of 28 days.

E. If, during the progress of the work, it is impossible to secure concrete of the required workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the desired properties. All changes so ordered shall be made at the Contractor's expense.

F. If, during the progress of the work, the Contractor desires to use materials other than those approved (originally), or if the materials from the source originally approved change in characteristics, the Contractor shall, at his expense, have made new acceptance tests of aggregates and establishment of new basic mixtures by the approved testing laboratory being employed on the work. Objectionable changes in color of the structure shall not result from these modifications.

G. Consistency of the concrete as measured by the ASTM Designation C143 shall be as shown in Table B.

TABLE B

Portion of Structure	Slump (inches)	
	Recommended	Range
Pavement and slabs on ground	2	1 - 3
Plain footings, gravity walls, slabs, and beams	2 - 3	1 - 4
Heavy reinforced foundation walls and footings	3 - 4	2 - 5
Thin reinforced wall and columns	4	3 - 5

H. Concrete shall be of such consistency and mix composition that it can be readily worked into the corners and angles of the forms and around the reinforcement, inserts, and wall castings without permitting materials to segregate or free water to collect on the surface, due consideration being given to the methods of placing and compacting.

I. No excessively wet concrete will be permitted, and if at any time concrete of such consistency beyond the limits of Table B is delivered to the job, the Engineer may direct the Contractor to reject same or to add extra cement for which no additional payment will be made. A supply of cement shall be kept available at the Site for this purpose. No additional water shall be added by drivers of transit-mix trucks except that established for the design. Failure to comply with this requirement shall be justification for rejecting the concrete.

J. The entrained air, as measured by the Pressure Method, ASTM C231, shall be:

TABLE C	
Location	Total Air Measured at Discharge from Truck (%)
Finished slabs	3.0 maximum
All other	3.5 - 5.0

1.05 ACCEPTANCE TESTS

A. Conformity of aggregates to these Specification, and the actual proportions of cement, aggregates, and water necessary to produce concrete conforming to the requirements set forth in Table A, shall be determined by tests made with representative samples of the materials to be used on the work. Tests will be made by the approved laboratory.

B. Cement shall be subject to testing to determine that it conforms to the requirements of this Specification if it is required by the Engineer.

C. Samples of fine and coarse aggregates shall be furnished for examination and testing at least 3 weeks before the Contractor proposes to use them in the work.

D. Water content of the concrete shall be based on a curve showing the relation between water content and 7- and 28-day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least three test specimens at each age, and shall have a range of values sufficient to yield the desired data, including all the compressive strengths called for on the plans, without extrapolation. The water content of the concrete to be used, as determined from the curve, shall correspond to the following test strengths of the laboratory trial mixtures:

TABLE D		
Design Strength	Min. Lab. 7 Days*	Strength 28 Days**
2500	2000	2900
3500	3000	4100

* May be employed for preliminary design
** To be used for final designs

E. In no case, however, shall the resulting mix conflict with the limiting values for maximum water-cement ratios and minimum cement contents as specified in Table A.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall conform to these Specifications and any state or local specification requirements.

B. Cement for all cast in place concrete shall be a domestic Portland cement (ASTM C-150, Type II) or high early strength Portland cement (ASTM C-150, Type III) free from injurious water soluble salts or alkalies. High early strength cement may only be used with written approval of the Engineer. Air entraining cements shall not be used. Cement brands shall be subject to approval of the Engineer.

C. Aggregates

1. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM Specification C-33, and the following detailed requirements:

Sieve	Retained
No. 4	0 - 5 percent
16	25 - 40
50	70 - 87
100	93 - 97
Fineness Modulus	2.60 - 3.00
Organic	See Plate 2, ASTM C40
Silt	2.0 percent maximum
Mortar Strength	95 percent minimum as per C87 Section 10
Soundness	8 percent maximum loss, using magnesium sulfate, subjected to 5 cycles

2. Course aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM Specification C-33 and the following detailed requirements.

Organic	See Plate 1, ASTM C40
Silt	1.0 percent maximum
Soundness	8 percent maximum loss, using magnesium sulfate, subjected to 5 cycles

3. The following designated sizes of aggregate shall be the maximum employed in concrete.

2-inch for plain concrete
1-inch for reinforced section 10-inch and over in thickness
3/4-inch for reinforced sections less than 10-inch thickness

4. Note:

The "Designated Size" and the corresponding gradations shown represent the end or combined gradation of the coarse aggregate to be used in the final concrete.

D. Water

1. Water shall be clean and free from injurious amounts of oils, acid, alkali, organic matter, or other deleterious substances.

2. When subjected to the mortar strength test described in ASTM C87, the 28-day strength of mortar specimens made with the water under examination and normal Portland cement shall be at least 100 percent of the strength of similar specimens made with distilled water.

3. Potable tap water will normally fulfill the above requirements.

E. Admixtures

1. A water reducing agent shall be used in all concrete. The admixture shall conform to ASTM Specification C494, Type A. Proportioning and mixing shall be as recommended by the manufacturer.

2. Admixtures causing accelerated setting of cement in concrete shall not be used. Air entraining admixtures with demonstrated compatibility with the concrete mix shall be used as required as a moderate addition to the water reducing agent to obtain the specified percent air in the resultant concrete.

F. Grout

1. Grout for setting bearing plates for structural steel, machinery, and other equipment shall be mixed as recommended by the manufacturer to give the necessary consistency for placing and to give a minimum compressive strength of 3,000 psi in 3 days and 6,800 psi in 28 days.

2. Non-shrink grout shall be Masterflow 713 as manufactured by the Master Builders Company, Euco N-S by Euclid Chemical Company, Five Star Grout by U.S. Grout Corporation, or equal.

PART 3 - EXECUTION

3.01 MEASURING MATERIALS

A. Materials shall be measured by weighing except as otherwise specified or where other methods are specifically authorized by the Engineer. The apparatus provided for weighing the aggregates and cement shall be suitably designed and constructed for this purpose. Scales shall have been certified by the local Sealer of Weights and Measures within 1 year of use. Each size of aggregate and the cement shall be weighted separately. The accuracy of all weighing devices shall

be such that successive quantities can be measured to within 1 percent of the desired amount. Cement in standard packages (sacks) need not be weighted, but bulk cement and fractional packages shall be weighted.

B. Water shall be measured by volume or by weight. The water-measuring device shall be capable of control to 1/2 percent accuracy. All measuring devices shall be subject to approval. Admixtures shall be dispensed either manually with use of calibrated containers or measuring tanks, or by means of an approved automatic dispenser designed by the manufacturer of the specific admixture.

3.02 MIXING

A. Concrete shall be ready-mixed, or transit-mixed, as produced by equipment acceptable to the Engineer. No hand-mixing will be permitted. Adding water in controlled amounts during the mixing cycle shall be done only with the express approval of, and under the direction of, the Engineer.

B. Ready-mix or transit-mixed concrete shall be transported to the Site in watertight agitator or mixer trucks loaded not in excess of rated capacities for the respective conditions as stated on the name plate. Discharge at the Site shall be within 1-1/2 hours after cement was first introduced into the mix. Central mixed concrete shall be plant-mixed a minimum of 1-1/2 minutes per batch and then shall be truck-mixed or agitated a minimum of 8 minutes. Agitation shall begin immediately after the pre-mixed concrete is placed in the truck and shall continue without interruption until discharge. Transit-mixed concrete shall be mixed at mixing speed for at least 10 minutes immediately after charging the truck, followed by agitation without interruption until discharged.

C. All central plant and rolling stock equipment and methods shall conform to the latest Truck Mixer and Agitator Standards of the Truck Mixer Manufacturers' Bureau of the National Ready-Mixed Concrete Association, as well as ACI Standard 614 and ASTM Specification C94.

D. The retempering of concrete or mortar which has partially hardened, that is, mixing with or without additional cement, aggregate, or water, will not be permitted.

E. Attention is called to the importance of dispatching trucks from the batching plant so that they shall arrive at the Site of the work just before the concrete is required, thus avoiding excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms.

3.03 FIELD TESTS

A. Sets of three field control cylinder specimens will be taken at random by the Contractor at the request of the Engineer during the progress of the work, in conformity with ASTM Designation C31; the total number of specimens taken on the project may average one set per 150 cubic yards, and in general not less than one set of specimens will be taken on any 1 day when concrete is placed. The cylinders shall be tested by the selected laboratory and the results submitted to the Engineer. When average ultimate 28-day strength of control cylinders in any set falls below the required ultimate strength or below proportional minimum 7-day strengths where proper relation between 7- and 28-day strengths have been established by tests, proportions, water content, or temperature conditions shall be changed to secure the required strength.

B. The Contractor shall cooperate in the making of such tests to the extent of allowing free access to the work for the selection of samples, providing heated moist storage facilities for specimens, affording protection to the specimens against injury or loss through his operations, and furnishing material and labor required for the purpose of taking concrete cylinder samples, curing boxes, and shipping boxes.

C. Slump tests will be made in the field by the Contractor.

D. The Engineer will retain the right to perform any tests, inspections, etc. as he deems necessary. The Contractor shall provide concrete cylinders as necessary for the Quality Assurance tests.

3.04 INSPECTION AND CONTROL

A. The preparation of forms, placing of reinforcing steel, conduits, pipes, and sleeves, batching, mixing, transportation, placing and curing of concrete shall be at all times under the inspection of the Engineer.

B. The Contractor will also engage the services of a testing laboratory to establish the basic mixtures of concrete as required by the specifications.

C. Air entrainment shall be measured by the Contractor at time of concrete deposit in accordance with ASTM Designation C231.

3.05 CONCRETE APPEARANCE

A. Concrete for every part of the work shall be of homogeneous structure which, when hardened, will have the required strength, durability, and appearance.

B. Formwork, mixtures, and workmanship shall be such that concrete surfaces, when exposed, will require no finishing.

3.06 FORMS

A. Forms shall be used for all concrete masonry, including footings. Forms shall be so constructed and placed that the resulting concrete will be of the shape, lines, dimensions, appearance, and to the elevations indicated on the Drawings.

B. Forms for all exposed exterior and interior concrete walls shall be B-B Plyform Class I exterior plywood, mill oiled and edge sealed. For curved walls, provide approved curved form material to provide the smooth radius shown. Moldings for chamfers and rustications shall be milled and planed smooth.

C. Forms for all other cast in place concrete shall be made of wood, metal, or other approved material. Wood forms shall be constructed of sound lumber or plywood of suitable dimensions, free from knotholes and loose knots; where used for exposed surfaces, boards shall be dressed and matched. Plywood shall be sanded smooth and fitted with tight joints between panels. Metal forms shall be of an approved type for the class of work involved and of the thickness and design required for rigid construction.

D. Edges of all form panels in contact with concrete shall be flush within 1/32-inch and forms for plane surfaces shall be such that the concrete will be plane within 1/16-inch in 4 feet. Forms shall be tight to prevent the passage of mortar and water and grout.

E. Molding or bevels shall be placed to produce a 3/4-inch chamfer on all exposed projecting corners. Approved chamfer strips shall be provided at horizontal and vertical extremities of all wall placements to produce "clean" separation between successive placements shown.

F. Forms shall be sufficiently rigid to withstand vibration, to prevent displacement or sagging between supports, and constructed so the concrete will not be damaged by their removal. The Contractor shall be entirely responsible for their adequacy.

G. Forms, including new pre-oiled forms, shall be oiled before reinforcement is placed, with an approved nonstaining oil or liquid form coating not having a paraffin base.

H. Before form material is reused, all surfaces in contact with concrete shall be thoroughly cleaned, all damaged places repaired, all projecting nails withdrawn, all protrusions smoothed and in the case of wood forms pre-oiled.

I. Form ties encased in concrete shall be designed so that after removal of the projecting part, no metal shall be within 1-inch of the face of the concrete. That part of the tie to be removed shall be at least 1/2-inch diameter or be provided with a wood or metal cone at least 1/2-inch in diameter and 1-inch long. Form ties in concrete exposed to view shall be the cone-washer type. Throughbolts or common wire shall not be used for form ties.

3.07 PLACING AND COMPACTING

A. Unless otherwise permitted, the work begun on any day shall be completed in daylight of the same day.

B. Place no concrete until reinforcing steel, pipes, conduits, sleeves, hangers, anchors, and other work required to be built into concrete have been inspected and approved by the Engineer. Remove water and foreign matter from forms and excavation. Place no concrete on frozen soil, and provide adequate protection against frost action during freezing weather. All soil bottom for slabs and footings shall be approved by the Engineer before placing concrete.

C. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which prevent separation of ingredients and displacement of reinforcement, and which avoid rehandling. Deposit no partially hardened concrete.

D. "Cold joints" are to be avoided, but if they occur, are to be treated as bonded construction joints.

E. At construction joints the surfaces of the concrete already placed, including vertical and inclined surfaces, shall be thoroughly cleaned of foreign materials and laitance, and weak concrete and roughened with suitable tools to expose a fresh face. At least 2 hours before and again shortly before the new concrete is deposited, the joints shall be saturated with water. After glistening water disappears, the joints shall be given a thorough coating of neat cement slurry mixed to the consistency of very heavy paste. The surfaces shall receive a coating at least 1/8-inch thick, well scrubbed-in by means of stiff bristle brushes whenever possible. New concrete shall be deposited before the neat cement dries.

F. Deposit concrete to maintain, until the completion of the unit, a horizontal plastic surface. Vertical lifts shall not exceed 24-inch and shall preferably be 18-inch.

G. Concrete during and immediately after depositing shall be thoroughly compacted by means of suitable tools. Internal type mechanical vibrators shall be employed to produce required quality of finish. Vibration shall be done by experienced operators under close supervision and shall be carried on long enough to produce homogeneity and optimum consolidation without permitting segregation of the solid constituents or "pumping" or migration of air. All vibrators shall be supplemented by proper wooden spade puddling adjacent to forms to remove included bubbles and honeycomb. This is essential for the top lifts of walls. All vibrators shall travel at least 10,000 rpm and be of adequate capacity. At least one vibrator shall be used for every 10 cubic yards of concrete placed per hour.

H. Concrete slabs on the ground shall be well-tamped into place and foundation material shall be wet, tamped, and rolled until thoroughly compacted prior to placing concrete.

I. Concrete shall be deposited continuously in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of weakness within the section. If a section cannot be placed continuously, construction joints may be located at points as provided for in the Drawings or approved by the Engineer.

3.08 CURING AND PROTECTION

A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.

B. Concrete placed at air temperature below 40°F shall have a minimum temperature of 60°F. When the air temperature is below 40°F or near 40°F and falling, the water and aggregates shall be heated before mixing. Accelerating chemicals shall not be used to prevent freezing. All concrete shall be so protected that the temperature at the surface will not fall below 50°F for at least 7 days after placing. The Contractor shall submit for approval by the Engineer the methods he proposes to use against low temperatures. No salt, manure, or other chemicals shall be used for protection.

C. All concrete, particularly exposed surfaces, shall be treated immediately after concreting or cement finishing is completed to provide continuous moisture curing above 50°F for at least 7 days, regardless of the ambient air temperature. Walls and vertical surfaces may be covered with continuously saturated burlap, or other approved means; horizontal surfaces, slabs, etc., shall be ponded to a depth of 1/2-inch or kept continuously wet by use of sprinklers.

D. In cold weather supplementary continuous warm curing (above 50°F) shall provide a total of 350-day degrees (i.e., 5 days 70°F, etc.) of heat.

E. Wherever practicable, finished surface and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.

3.09 REMOVAL OF FORMS

A. Except as otherwise specifically authorized by the Engineer, forms shall not be removed before the concrete has attained a strength of at least 30 percent of the ultimate strength prescribed by the design, and not before reaching the following number of day-degrees (whichever is the longer):

Forms for	Day-Degree*
Beams and slabs	500
Walls and vertical surfaces	100

* Day-Degree: Total number of days times average daily air temperature at surface of concrete. For example, 5 days at a daily weighted average temperature of 60°F equal 300 day-degrees. Temperatures below 50°F not to be included.

B. Shores shall not be removed until the concrete has attained at least 60 percent of the specified strength and also sufficient strength to support safely its own weight an the construction live loads upon it.

3.10 FAILURE TO MEET REQUIREMENTS

A. Should the strengths shown by the test specimens made and tested in accordance with the above provisions fall below the values given in Table A, the Engineer shall have the right to require changes in proportions as outlined above to apply on the remainder of the work. Furthermore, the Engineer shall have the right to require additional curing on those portions of the structure represented by the test specimens which failed, the cost of such additional curing to be at the Contractor's expense. In the event that such additional curing does not give the strength required, as evidenced by core and/or load tests, the Engineer shall have the right to require strengthening or replacement of those portions of the structure which fail to develop the required strength. The cost of all such core borings and/or load tests and any strengthening or concrete replacement required because strengths of test specimens are below that specified, shall be entirely at the expense of the Contractor. In such cases of failure to meet strength requirements, the Contractor and Engineer shall confer to determine what adjustment, if any,

can be made in conformity with Sections 15 and 17 of ASTM Specification C94 for Ready-Mixed Concrete.

B. When the tests on control specimens of concrete fall below the required strength, the Engineer will permit check tests for strengths to be made by means of typical cores drilled from the structure in accordance with ASTM Methods C42 and C 39. In case of failure of the latter, the Engineer, in addition to other recourses, may require, at the Contractor's expense, load tests on anyone of the slabs, beams, piles, caps, and columns in which such concrete was used. Test need not be made until concrete has aged 60 days.

3.11 PATCHING AND REPAIRS

A. It is the intent of these Specification to require forms, mixture of concrete and workmanship so that concrete surfaces, when exposed, will require no patching.

B. As soon as the forms have been stripped and the concrete surfaces exposed, fins and other projections shall be removed, recesses left by the removal of form ties shall be filled except as specified below, and surface defects which do not impair structural strength shall be repaired. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to approval of the Engineer.

C. Immediately after stripping of forms, remove tie cones and break off metal ties except where required below to be left in place. Holes are then to be promptly filled upon stripping as follows: moisten the hole with water, followed by a 1/16-inch brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1-1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spiderweb. Trowel smooth with heavy pressure. Avoid burnishing.

3.12 INSTALLATION SCHEDULE

Concrete for all structures shall have minimum compressive strength at 28 days of 3,500 psi.

3.13 MISCELLANEOUS WORK

A. All bolts, anchors, miscellaneous metals, or other sleeve steel work required to be set in the concrete forms for attachment of masonry, structural, and mechanical equipment shall be set or installed under this Division. The Contractor shall be fully responsible for the setting of such materials in the forms and shall correct all such not installed in a proper location or manner at his own expense.

B. Electric conduits shall be installed in the concrete as required by the Drawings and specified elsewhere in these Specifications. Outlet boxes and fixtures shall be located in reference to the final floor, wall, or ceiling finish and shall be so secured that they will not be displaced by concrete placing.

C. Pipes or conduits for embedment, other than those merely passing through shall not be larger in outside diameter than one-third the thickness of the slab, wall, or beam in which they are embedded, unless indicated on the Drawings, nor shall they be spaced closer than three diameters on center, nor so located as to unduly impair the strength of the construction. The Engineer shall approve the location of all conduits and fixtures.

D. Concrete foundations, supports, and bases for all equipment and machinery shall be built to the equipment manufacturer's requirements, as approved by the Engineer, with anchor bolts installed.

3.14 FIELD CONTROL

The Contractor shall advise the Engineer of his readiness to proceed at least 6 working hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing and the alignment and tightness of formwork. No placement shall be made without the prior approval of the Engineer.

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03350 - CONCRETE FINISHES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to finish cast-in-place concrete surfaces as specified herein.

1.02 RELATED WORK NOT INCLUDED

A. Patching and repair of defective and honeycombed concrete is included in Section 03300 - CAST-IN-PLACE CONCRETE.

1.03 SCHEDULE OF FINISHES

A. Concrete for the project shall be finished in the various specified manners either to remain as natural concrete or to receive an additional applied finish or material under another Section.

B. Finishes to the base concrete for the following conditions shall be finished as noted and as further specified herein:

1. Concrete to receive dampproofing - Off-form finish.

2. Exterior concrete and exposed interior concrete - rubbed finish as approved.

3. Concrete not exposed in the finished work and not scheduled to receive an additional applied finish - Off-form finish.

1.04 RESPONSIBILITY FOR CHANGING FINISHES

A. The surface finishes specified herein are required for the proper application of products specified under other Sections. Where products different from those specified are approved for use, it shall be the Contractor's responsibility to determine if changes in concrete finishes are required and to provide them at no additional cost to the ECC Trust.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cementitious and component materials required for finishing with the concrete surfaces shall be specified in Section 03300 - CAST-IN-PLACE CONCRETE.

PART 3 - EXECUTION

3.01 FORMED SURFACES

A. Forms shall not be stripped before the provisions of Section 03300, Paragraph 3.08A have been met.

B. Care shall be exercised to prevent damaging of surfaces or edges or obliterating the lines of chamfers, rustications, or corners when removing the forms or doing any other work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.

D. Concrete to receive dampproofing and concrete not exposed in the finished work shall have off-form finish with fins and other projections removed and tie cones and defects filled as specified under Section 03300 - CAST-IN-PLACE CONCRETE.

3.02 FLOORS AND SLABS

A. Floors and slabs shall be screened to the established grades and shall be level with a tolerance of 1/8 inch when checked with a 12 foot straightedge, except where drains occur, in which case floors shall be pitched to drains as indicated. Failure to meet either of above shall be cause for removal, grinding, or other correction as directed by the Engineer.

B. After procedures specified in Paragraph 3.02A is accomplished, floors and slabs for particular conditions shall be finished as specified in the Paragraphs 3.02C and 3.02D.

C. Wood float where required maintaining surface tolerances to provide a non-slip finish as approved.

D. Concrete for exterior, non-submerged service shall be broomed in the direction of slab drainage maintaining the surface tolerance to provide a non-slip finish as approved.

3.03 APPROVAL OF FINISHES

A. All concrete surfaces, when finished, will be inspected by the Engineer.

B. Surfaces which, in the opinion of the Engineer, are unsatisfactory shall be refinished or reworked until approved by the Engineer.

END OF SECTION

APPENDIX

A

APPENDIX A

REMOVAL ITEM
INVENTORY SUMMARY TABLES

(INVENTORY PERFORMED ON NOVEMBER 13, AND 14, 1992)

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 1 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-1	15.35	10.6	3/16	Fair	Clean and dry	16 feet of 2-inch piping 15 feet of 3-inch piping
T-2	18	10	3/16	Fair	Clean and dry	15 square feet of insulation 5 foot x 5 foot hole cut in side
T-3	30	6	1/4	Good	Unknown	Inaccessible port Riveted steel
T-4	32.2	5.5 avg.	1/8	Poor	Clean and dry	5,000 gallon tanker Truck-back end cut open Stainless steel
T-5	33	5.5 avg.	3/16	Fair	Empty	Tanker truck with baffles
T-6	31.5	10	3/16	Fair	Unknown	Inaccessible port
T-7	24	8	3/16	Poor	Clean and dry	Tank has four 6-foot legs
T-8	23.5	10.5	1/4	Fair	Unknown	Inaccessible port Riveted steel
T-9	20	10	1/4	Poor	Unknown	Inaccessible port Riveted steel

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 2 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-10	27	8	3/16	Fair	Clean and dry	
T-11	25.5	4.25	3/16	Poor	Empty with considerable amount of scale	4,000 gallon vacuum tanker truck on wheels Miscellaneous piping and equipment attached
T-12	24	5.35	3/16	Fair	Empty with minimal scale debris	
T-13	22	8	3/16	Fair	Unknown	Inaccessible port
T-14	18	9.5	3/16	Poor	Chemical scale on interior walls 1 inch clear liquid on bottom	5 foot x 3 foot hole cut 3 foot x 2 foot hole cut
T-15	13.5	7.5	3/16	Fair	Clean and dry	
T-16	16	10.4	1/4	Fair	Clean and dry	Riveted steel
T-17	16	13	3/16	Fair	Clean and dry Minimal scale	
T-18	12	8	3/16	Poor	Puddled water on bottom; otherwise clean	
T-19	12	8	3/16	Poor	Clean and dry	
T-20	21	8	3/16	Fair	Unknown	No visible ports

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 3 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-21	35	7	1/4	Fair	Clean and dry	Riveted steel Scale on interior wall Note on side of tank painted "PCB Hoses Only"
T-22	15.5	10.5	1/8	Poor	Clean and empty Minimal scale	
T-23	21	12.5	3/16	Poor	Clean and dry Minimal scale	
T-24	16	10	3/16	Poor	1 inch liquid Some solid debris Tank scale	
T-25	15	10.5	3/16	Poor	Clean with minimal solid debris and tank scale	
T-26	32.3	5 avg.	1/8	Very poor	Nothing	Tanker truck with side cut out Note on truck: "Licensed Special Waste Hauler - ILL EPA-0295/002"

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 4 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-27	12	8	3/16	Poor	Empty except for roof debris on bottom 1 to 2 inches of liquid on bottom; most likely rain water	Roof is missing (rusted away)
T-28	25.5	9	1/4	Fair	Empty except for solid debris and tank scale	Riveted steel
T-29	30	10.5	3/16	Fair	Unknown	Inaccessible port
T-30	20.3	10	1/4	Fair	Unknown	Riveted steel Inaccessible port
T-31	24.5	10.5	3/16	Poor	1 inch liquid on bottom and minimal scale	
T-32	16	8	1/4	Poor	Unknown	Inaccessible port Severely dented
T-33	27	8	3/16	Fair	Clean and dry with minimal tank scale	Painted on side "Caution PCBs"
T-34	16	13	3/16	Poor	Clean and empty with minimal scale	Miscellaneous piping along side
T-35	6.25	5	3/16	Fair	1/2 inch liquid with tank scale and crust	
T-36	19	6	3/16	Fair	Clean and dry	Built 1971

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 5 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-37	12	5.5	3/16	Fair	Clean and dry	8 feet of pipe along tank
T-38	12	5.5	3/16	Fair	Unknown	Inaccessible port
T-39	13	9.5	3/16	Fair	2 inch tank scale Solid debris unknown	
T-40	12	5.5	3/16	Fair	Unknown	Inaccessible port
T-41	13	9.5	3/16	Fair	Clean with minimal scale	
T-42	13	9.5	3/16	Fair	Clean and empty	
T-43	13	9.5	3/16	Fair	Clean and empty	
T-44	6	5.5	3/16	Fair	Clean and dry Minimal scale	
T-45	12.2	3.8	3/16	Fair	Unknown	Inaccessible port
T-46	6	6	3/16	Poor	Clean and dry	Wrapped in foam insulation with miscellaneous piping
T-47	6	4.5	3/16	Poor	Clean and dry with minimal tank scale	Wrapped in foam insulation with miscellaneous piping
T-48	11.5	5	1/4	Fair/Good	1/4 inch liquid; otherwise clean	Stainless steel construction with miscellaneous piping
T-49	6	4	3/16	Fair	Clean and dry	Miscellaneous piping

TABLE 1

TANK INVENTORY SUMMARY TABLE
PAGE 6 OF 6

Tank Number	Height/Length (Ft)	Diameter (Ft)	Thickness (In)	Condition	Contents	Miscellaneous/Comments
T-50	6	6	3/16	Fair	Clean and dry	Wrapped in foam insulation
T-51	6	4.5	3/16	Fair	Clean and dry	Wrapped in foam insulation
T-52	30	6	3/8	Fair	Unknown	Riveted steel Inaccessible ports
T-53	22	7.5	3/16	Fair	Unknown	Inaccessible ports

Notes

1. All tanks and piping are constructed of carbon steel unless otherwise noted.
2. All tanks had no detectable PID or LEL/O_2 indications other than background readings.
3. Considerable amount of brush exists between/around tanks including trees up to 4 inches in diameter.
4. A concrete and steel tank stand, forklift, and other various steel debris is scattered about the tank area.
5. References to measurements (height, diameter, and thickness of tank) are approximate.

TABLE 2

DRUM STORAGE AREA INVENTORY SUMMARY TABLE

Drum Storage Area	Quantity of Drums	Condition	Comments
1	240 ±	Poor: Deteriorated	Drums from the Enviro-Chem Site and the Northside Sanitary Landfill contained soil cuttings from drilling operations, groundwater, decontamination water, and chemical protective clothing. Several drums are unmarked as to their contents or source of contents. Some drums have rusted open and now contain nothing.
2	10	New: Able to be shipped as is	Eight drums contain soil cuttings, decontamination water, groundwater, and chemical protective clothing from activities on the Enviro-Chem Site generated by AWD. Two unused drums remain empty.

Notes

1. All drums are 55-gallon.
2. Approximately 20 other drums are located in various other areas onsite.

TABLE 3

STRUCTURE INVENTORY SUMMARY TABLE
PAGE 1 OF 3

Building	Dimensions (Ft)	Building Materials	Contents
A-Frame House	28 x 20 x 18 H	All wood construction with asphalt shingles; above ground construction; no foundation	
Lower Floor; West Room	12 x 18		Ten 50-lb bags of grass fertilizer Eight 50-lb bags of plant food Three gallons of pesticide Two gallons of paint One 55-gallon drum; unknown contents One tire Six milk crates One 5-foot book shelf Ten square feet of rubber matting Several florescent light fixtures (4-foot long) Three boxes of florescent light tubes (4-foot long) Several yard hand tools Other miscellaneous debris
Lower Floor; East Room	12 x 18		5 foot x 3 foot kitchen cabinet unit One kitchen sink One table band saw One wall air conditioning unit Two work tables Three chairs Two lawn fertilizer spreaders 100 feet of 1-inch PVC tubing Several boxes of sorbent pads (24 inch x 24 inch) and 8-inch diameter x 6 feet long sorbent sock One tire One 55-gallon tub Two rolls of carpet pad (6 foot x 20-inch diameter) Miscellaneous 5-gallon buckets of debris Loose fertilizer on floor

TABLE 3

STRUCTURE INVENTORY SUMMARY TABLE
PAGE 2 OF 3

Building	Dimensions (Ft)	Building Materials	Contents
Upper Level; One Room	24 x 10	9 inch x 9 inch vinyl floor tile	Three boxes of sorbent pads (24 inch x 24 inch) Miscellaneous debris (basically clean and empty)
Outside; West			One office desk One fertilizer spreader Wood debris Miscellaneous debris
Outside; East			Two air conditioner units One office desk Miscellaneous debris
Process Building	76 x 36/30 x 32 H		
Room 1	30 x 18 x 16 H	One cinder block wall (16 feet high x 30 feet) Eight 8 foot x 8 inch steel beams 150 feet of 6-inch channel steel Aluminum sheeting on walls and roof with fiberglass insulation Concrete floor/foundation	One boiler (16 foot x 6 1/2 foot diameter on 8-inch steel I-beam frame) One 5 foot x 3 foot fuel tank One 8 foot x 4 foot electrical panel
Room 2	30 x 27 x 16 H	Two cinder block walls (one between Rooms 1 and 2 accounted for in Room 1 listing (16 feet high x 30 feet) Aluminum walls on east and west sides Eight 8 inch x 30 foot steel beams Two 8 inch to 18 inch x 30 foot main beams Four 8 inch x 12 foot steel upright beams 120 feet of 6-inch steel channel beams Concrete floor/foundation	Various steel piping Three 10 foot x 8 foot book shelves (2 steel/1 wooden) One snowmobile Fifteen 4 foot x 8 foot styrofoam sheeting insulation

TABLE 3

STRUCTURE INVENTORY SUMMARY TABLE
PAGE 3 OF 3

Building	Dimensions (Ft)	Building Materials	Contents
Room 3	36 x 33 x 32 H	Two cinder block walls (between Rooms 2 and 3 accounted for in Room 2); the other wall is 23 feet high x 36 feet Aluminum walls on east and west sides Partially missing aluminum roof Wooden roof supports Concrete floor/foundation	One 6-foot exhaust fan built in ceiling Forty florescent light fixtures (4-foot long) Twelve steel bookshelves Six tires Forty 6-inch PVC elbows and tees Rolls of fiberglass insulation Various other debris

Note

1. All concrete floors/foundations will be left intact.

TABLE 4

MISCELLANEOUS DEBRIS AREA INVENTORY SUMMARY TABLE
(SEE DRAWINGS FOR LOCATIONS)
PAGE 1 OF 2

Miscellaneous Debris Area	Debris Item
1	Seven 55-gallon drums - unknown contents One 4 foot x 4 foot utility sink Pile of cardboard Pile of pieces of wood Painting tools
2	Ten 12-foot wood planks One 18 foot x 10 inch steel lifting beam Twelve 10 foot x 3 foot aluminum sheets
3	Scaffolding material - planks, stands, ladders One riding lawn mower One 30-gallon fuel tank Fifteen feet of 5-inch steel pipe Four 10 foot x 3 foot aluminum sheets One metal storage box (4 foot x 3 foot x 2 foot) Two rolls of chicken wire (2 1/2 foot x 18 inches) One roll of cyclone fence (4 foot x 20 inches) Two 20-foot aluminum gutters Six prefab roof supports (25 foot x 4 foot)
4	Six tires One lawn mower Four wooden planks One snowmobile carcass
5	10 foot x 10 foot x 2 inch aluminum roof panel Eight 55-gallon drums - contents unknown Wood pile 20 square feet x 4 inches high 600 feet of 1-inch PVC piping 300 feet of 6-inch PVC piping 30 feet of 8-inch PVC piping 100 feet of 2-inch galvanized steel pipe 200 feet of 4-inch corrugated flexline pipe 2-inch steel tubing/framework (100 feet total length) One air compressor Seventeen 1-foot sections of terracotta pipe 300 feet of 1-inch PVC well tubing One 30-gallon tank Twelve concrete parking blocks (6 feet long)

TABLE 4

MISCELLANEOUS DEBRIS AREA INVENTORY SUMMARY TABLE
(SEE DRAWINGS FOR LOCATIONS)
PAGE 2 OF 2

Miscellaneous Debris Area	Debris Item
6	Three 3 foot x 15 foot sheets of aluminum One 6 foot x 3 foot book shelf One 10 foot x 12 foot aluminum wall One snowmobile carcass Scattered insulation One diesel truck engine Two truck tires One aluminum box 10 foot x 8 foot x 8 foot (storage shed) 10 foot x 12 foot area of machinery parts One 55-gallon drum - contents unknown

TABLE 5

SOIL VAPOR EXTRACTION PILOT STUDY AREA INVENTORY SUMMARY TABLE

Item	Quantity	Debris in Area
Pilot Vapor Extraction System	100 feet of 4-inch exposed PVC pipe 80 feet of 4-inch buried PVC pipe	8 railroad timbers 20 tires 30 feet of 4-inch corrugated flex line

Note

1. Buried pipe not included in this contract.

TABLE 6

OTHER SITE DEBRIS INVENTORY SUMMARY TABLE

Item	Approximate Quantity	Location
Dismantled modular tanks	450 square feet aluminum and plastic liner	Southern concrete pad
Wood pile	20 feet x 10 feet x 4 feet high	Southern concrete pad
Various pieces of aluminum sheeting	20	Entire site
Bentonite	1 pallet (500 lbs)	Northwest of Process Building

APPENDIX B

CHEMICAL ANALYSES OF SAMPLES

SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 1 OF 6

Parameter	Soil[2]		Sediments		Subsurface Water		Offsite Surface Water	
	Minimum[3]	Maximum[3]	Minimum[3]	Maximum[3]	Minimum (µg/L)	Maximum (µg/L)	Minimum (µg/L)	Maximum (µg/L)
Volatile								
Benzene					ND/4 J	9 K		
Chlorobenzene	ND/360	360						
1,1,1-Trichloroethane	ND/3 J	1,100,000			ND/5 K	7	ND/6	120
1,1-Dichloroethane	ND/380 J	380 J			ND/51.2	96	ND/45	45
1,1,2-Trichloroethane	ND/14	550						
Chloroethane					ND/29	120	ND/12	12
Chloroform	ND/5 J	2,900			ND/3 JB	9 K		
1,1-Dichloroethene	ND/47	35,000 B			ND/6	10		
Trans-1,2-Dichloroethene	ND/9	120,000 B			ND/3 J	4,000	ND/6 d	330
Trans-1,3-Dichloropropene					ND/77.5	77.5		
Ethyl Benzene	ND/14	1,500,000			ND/3 J	9 K	ND/2 d	13 d
Methylene Chloride	ND/8	310,000	ND/6.1	9.1	ND/2 J	64	ND/3 d	86
Trichlorofluoromethane			ND	ND	ND	ND		
Tetrachloroethene	ND/5 J	650,000			ND/9 K	9 K	ND/5 d	29
Toluene	ND/6	2,000,000			ND/9 K	9 K	ND/6	82
Trichloroethene	ND/3 J	4,800,000 B			ND/3 J	28,000	ND/13	240
Vinyl Chloride	ND/7	7			ND/6	85.8	ND/10	11

SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 2 OF 6

Parameter	Soil[2]		Sediments		Subsurface Water		Offsite Surface Water	
	Minimum[3]	Maximum[3]	Minimum[3]	Maximum[3]	Minimum (µg/L)	Maximum (µg/L)	Minimum (µg/L)	Maximum (µg/L)
Acetone	ND/16	650,000			ND/9 KB	15,030 B	ND/30	1,100
2-Butanone	ND/6 J	2,800,000			ND/9 K	26 B	ND/16	560
4-Methyl-2-Pentanone	ND/35 J	190,000						
Styrene					ND/5 K	5 K		
o-Xylene							ND	ND
Total Xylenes	ND/11	6,800,000			ND/9	12	ND/11	47
Acid Extractables								
p-Chloro-m-Cresol							ND/30 d,e	30 d,e
Phenol	ND/610	570,000					ND/92 e	92 e
2-Methylphenol	ND/340	340					ND/27 e	27 e
4-Methylphenol	ND/53,000	53,000					ND/89 e	120 e

SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 3 OF 6

Parameter	Soil[2]		Sediments		Subsurface Water		Offsite Surface Water	
	Minimum[3]	Maximum[3]	Minimum[3]	Maximum[3]	Minimum (µg/L)	Maximum (µg/L)	Minimum (µg/L)	Maximum (µg/L)
Base/Neutrals								
1,2-Dichlorobenzene	ND/240	900,000						
Fluoranthene					ND/20 K	20 K		
Isophorone	ND/270	440,000			ND/20 K	20 K	ND/86 e	ND/240 e
Naphthalene	ND/640	180,000						
bis(2-Ethylhexyl)phthalate	ND/230	370,000	ND/912	912	ND/23 K	23 K	ND	ND
Butyl Benzyl Phthalate	ND/400 J	47,000						
Di-n-Butyl Phthalate	ND/53	8,200						
Di-n-Octyl Phthalate	ND/310	2,100					ND/17 d,e	17 d,e
Diethyl Phthalate	ND/1,200	9,000			ND/20 K	20 K		
Dimethyl Phthalate	ND/360 J	1,300						
Crysene					ND/20 K	20 K		
Fluorene	ND/260	260						
Phenanthrene	ND/350	8,100						
Pyrene					ND/30	30		
2-Methylnaphthalene	ND/1,900	2,100						
PCB-1232	ND/340 C	540 C						
PCB-1260	ND/750	39,000						

SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 4 OF 6

Parameter	Soil[2]		Sediments		Subsurface Water		Offsite Surface Water	
	Minimum[3]	Maximum[3]	Minimum[3]	Maximum[3]	Minimum (µg/L)	Maximum (µg/L)	Minimum (µg/L)	Maximum (µg/L)
Inorganics								
Aluminum	1,920	44,800	2,172	9,744	ND/[65]	61,500	ND/[69]a	3,050 a
Antimony	ND/42	42	ND	ND	ND/4	4	ND	ND
Arsenic	ND/[4.5]	20	ND	ND	ND/15	15	ND	ND
Barium	[27]	1,730	27	102	150	1,070	ND/[92]	180
Beryllium	ND/[.36]	[3.9]	ND/0.6	0.6	ND	ND	ND	ND
Cadmium	ND/2.9	27	1.3 c	2.3	ND	ND	ND	ND
Calcium	[2,500]*	1,260,000	N/A	N/A	70,240 E	161,100 E	N/A	N/A
Chromium	9.6	145*	4	13	ND/11	144	ND/15	15
Cobalt	[3.4]	[51]	ND/5.3	5.3	ND/80	80	ND	ND
Copper	[13]	167	7	23	ND/[16]	106	ND/[18]	[18]
Iron	11,900	147,000	8,598	18,696	[51]	105,000	[77]	4,460
Lead	4.5	432*	6.8	31.3	ND/6.5	102	ND	ND
Magnesium	[2,060]*	292,000	N/A	N/A	29,780 E	131,800 E	N/A	N/A
Manganese	158	6,870	161	499	ND/17	1,930	76	1,708
Mercury	ND	ND	ND/0.05	2.25	ND/0.2	0.4	ND/0.2 b	0.4 b
Nickel	[5.8]	37	ND/13	23	ND/[32]	176	ND/[21]	47
Potassium	ND/[905]	[10,500]	N/A	N/A	ND/[1195]	105,940	N/A	N/A

SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 5 OF 6

Parameter	Soil[2]		Sediments		Subsurface Water		Offsite Surface Water	
	Minimum[3]	Maximum[3]	Minimum[3]	Maximum[3]	Minimum (μg/L)	Maximum (μg/L)	Minimum (μg/L)	Maximum (μg/L)
Selenium	ND	ND	ND	ND	ND/3	4	ND/6	6
Silver	ND/[3.3]	[3.8]	ND	ND	ND/14	33	ND/[9.2]	9.2
Sodium	ND/[480]	[15,600]	N/A	N/A	10,060	380,700	N/A	N/A
Thallium	ND	ND	ND	ND	ND/0.4	0.4	ND	ND
Tin	ND/17	30	ND	ND	ND	ND	ND	ND
Vanadium	[15]	37	ND/23	23	ND	ND	ND	ND
Zinc	[38]	650*	ND/52	75	ND/11	276	ND/36 B	79 B
Cyanide	ND/0.8	4.4	ND/33	73	ND	ND	ND/0.005	0.013

Notes

(1) These data were obtained from the tables of analytical results presented in Section 4.0 of the RI Report by CH2M Hill, dated March 14, 1986.

(2) The ranges given for soil are taken from the Phase II data only, since some soil was removed from the site after the Phase I analyses.

(3) The units for the soil and sediment analyses are: μg/kg for volatiles, acid extractables, base neutrals, and PCBs/pesticides results; and mg/kg for the inorganics results.

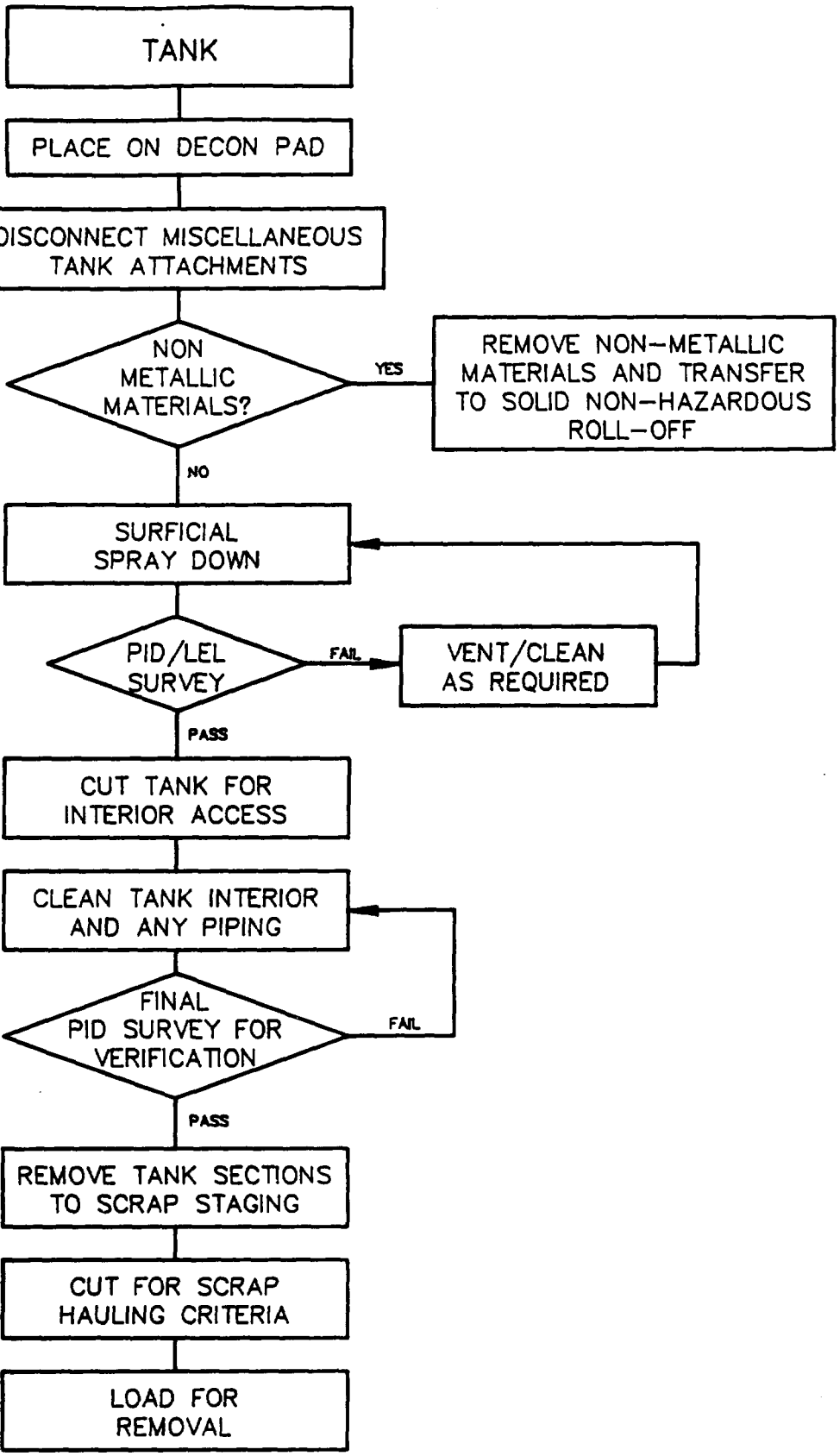
SUMMARY OF REMEDIAL INVESTIGATION DATA[1]
ECC SITE
PAGE 6 OF 6

Key

*	The duplicate analysis was not within control limits.
[]	The value was less than the Contract Required Detection Limit.
B	The analyte was found in the laboratory blank and in the sample, which indicates probable contamination.
C	The identification of this polychlorinated biphenyl (PCB)/pesticide parameter has not been confirmed by gas chromatography/mass spectrometry (GC/MS).
J	The value is estimated and occurs when the mass spectra data indicate the presence of a compound that meets the identification criteria and the result is less than the specified detection limit but greater than zero.
E	The value is estimated or not reported because of the presence of interferences.
K	The actual value, within the limits of the method, is less than the value given.
a	There was a poor or marginal recovery of this spiked metal.
b	This metal was also detected in the analysis of the field blank.
c	This value should be regarded as a qualitative indication of the presence of these metals because the concentration is below the lowest quantitative standard.
d	An estimated value.
e	The Quality Assurance (QA) review identified the results as semiquantitative because the average surrogate recovery was < 40 percent.
ND	The compound was not detected. A number after ND in the "Minimum" column is the lowest detected concentration of the compound. For example, "ND/6" means that the compound was not detected in some samples and that the lowest detected concentration was 6.
N/A	The compound was not analyzed for.
	A blank space in the table indicates that no analytical results were given in the Remedial Investigation Report for that compound in that matrix. The compound was either not analyzed for or not detected.

APPENDIX C

WASTE HANDLING SEQUENCING



AWD TECHNOLOGIES, INC

AWD TECHNOLOGIES

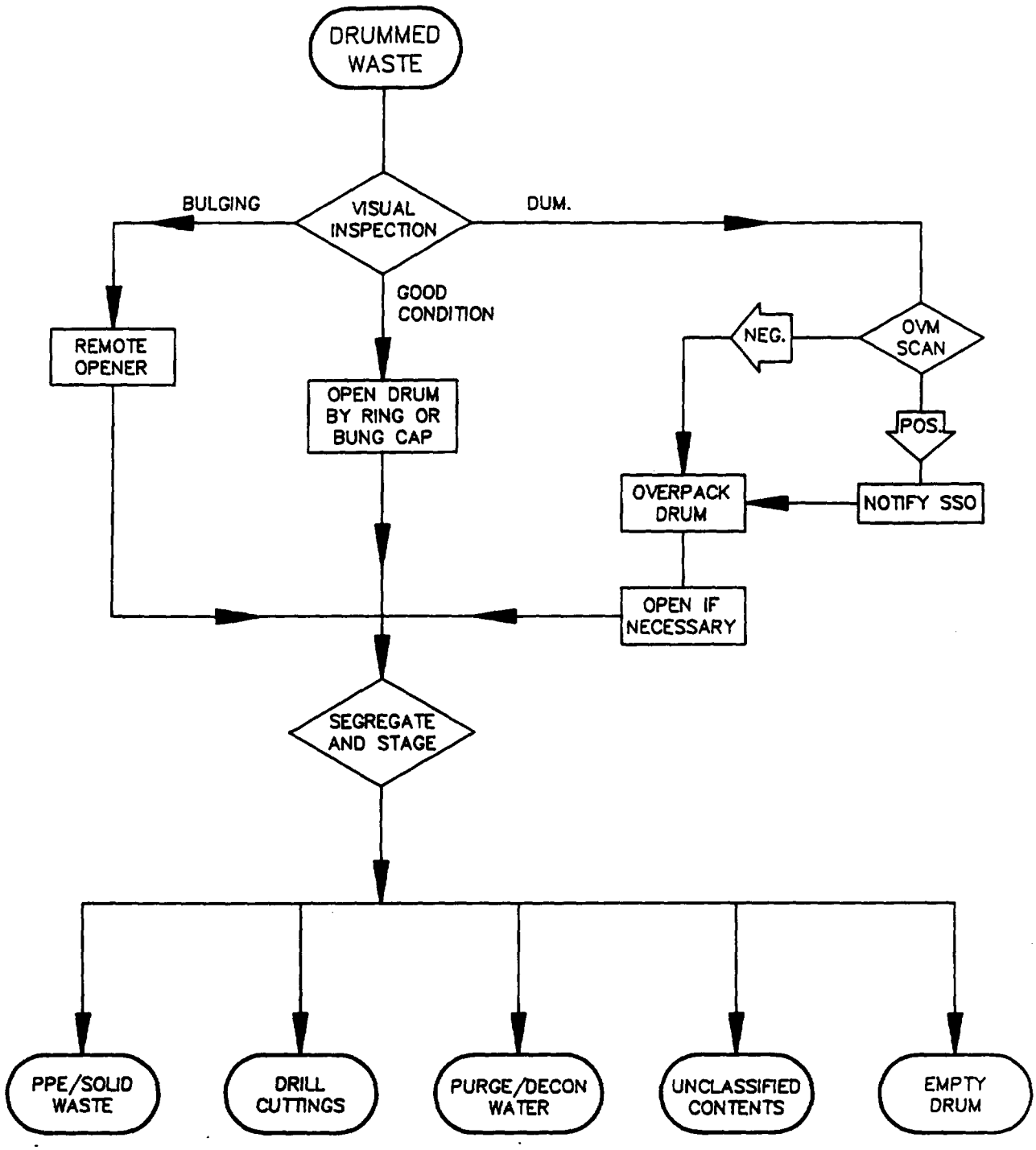
TANK HANDLING SEQUENCE

ENVIRO-CHEM SUPERFUND SITE — ZIONSVILLE, IN

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST | JOB NUMBER: 2259-320

SCALE: NOT TO SCALE | FIGURE NUMBER 1 | REV 0

FILE: \ECC\320\HANDLING GX2259401



NOTE:

SEE INDIVIDUAL SHEETS FOR SAMPLING AND HANDLING REQUIRED FOR SPECIFIC DRUMMED WASTE TYPES.

FILE: \ECC\320\DRUMINSP 6X19940N1

AWD TECHNOLOGIES, INC

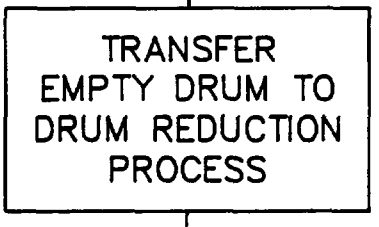
AWD TECHNOLOGIES

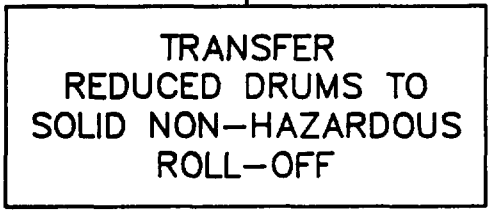
DRUMMED WASTE INITIAL INSPECTION/CLASSIFICATION

ENVIRO-CHEM SUPERFUND SITE ZIONSVILLE, N

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST | JOB NUMBER: 2259-320

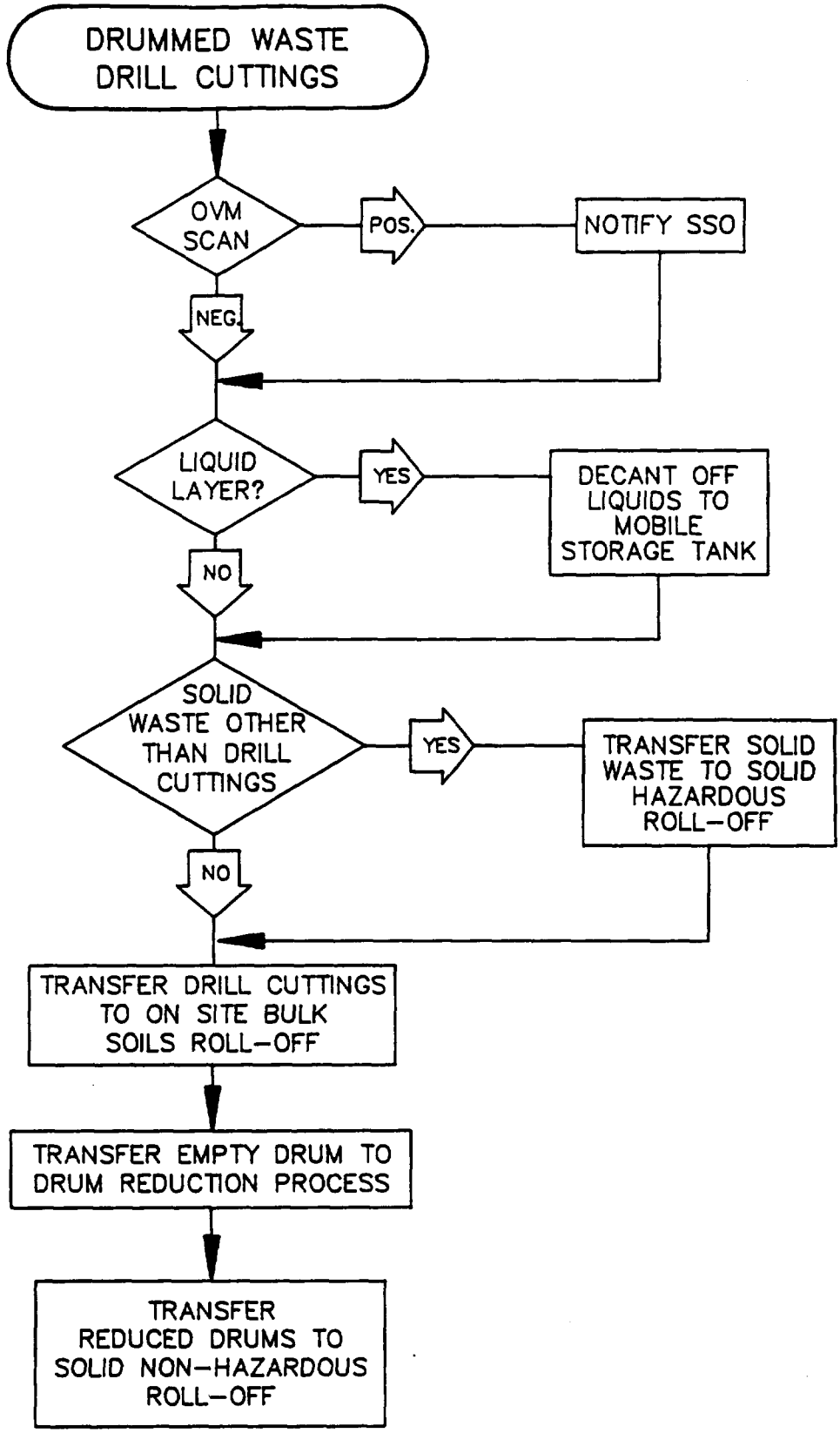
SCALE: NOT TO SCALE | FIGURE NUMBER 2 | REV 0





FILE: \ECC\320\DRUM-MT

AWD TECHNOLOGIES, INC	EMPTY DRUM HANDLING	
	ENVIRO-CHEM SUPERFUND SITE	ZIONSVILLE, IN
	CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST	JOB NUMBER: 2259-320
	SCALE: NOT TO SCALE / FIGURE NUMBER: 3	REV 0



AWD TECHNOLOGIES, INC

AWD TECHNOLOGIES

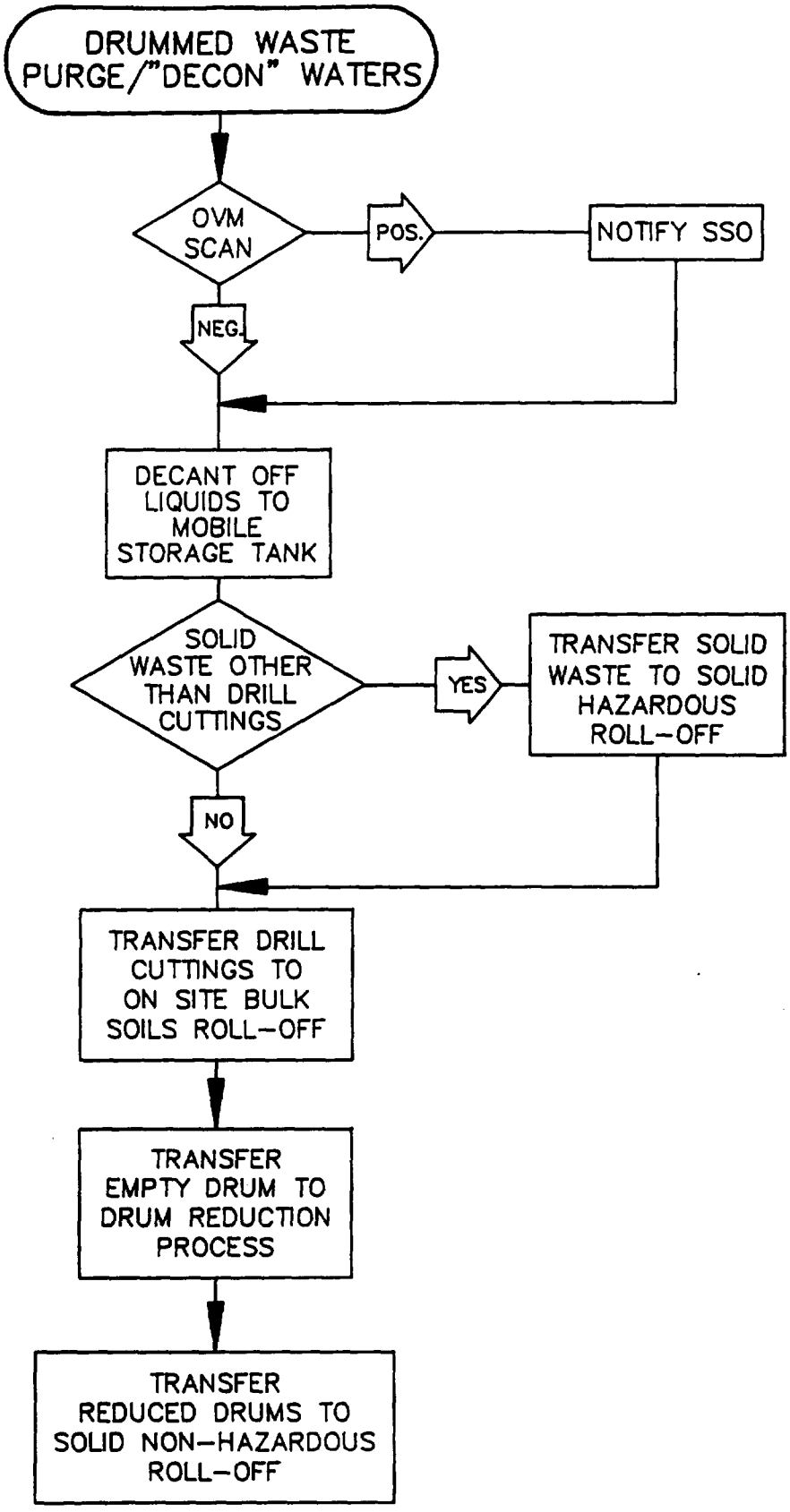
DRUMMED WASTE HANDLING
DRILL CUTTINGS

ENVIRO-CHEM SUPERFUND SITE — ZIONSVILLE, IN

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST | JOB NUMBER: 2259-320

SCALE: NOT TO SCALE | FIGURE NUMBER 4 | REV 0

FILE: \ECC\320\DRUM-CUT



AWD TECHNOLOGIES, INC

AWD TECHNOLOGIES

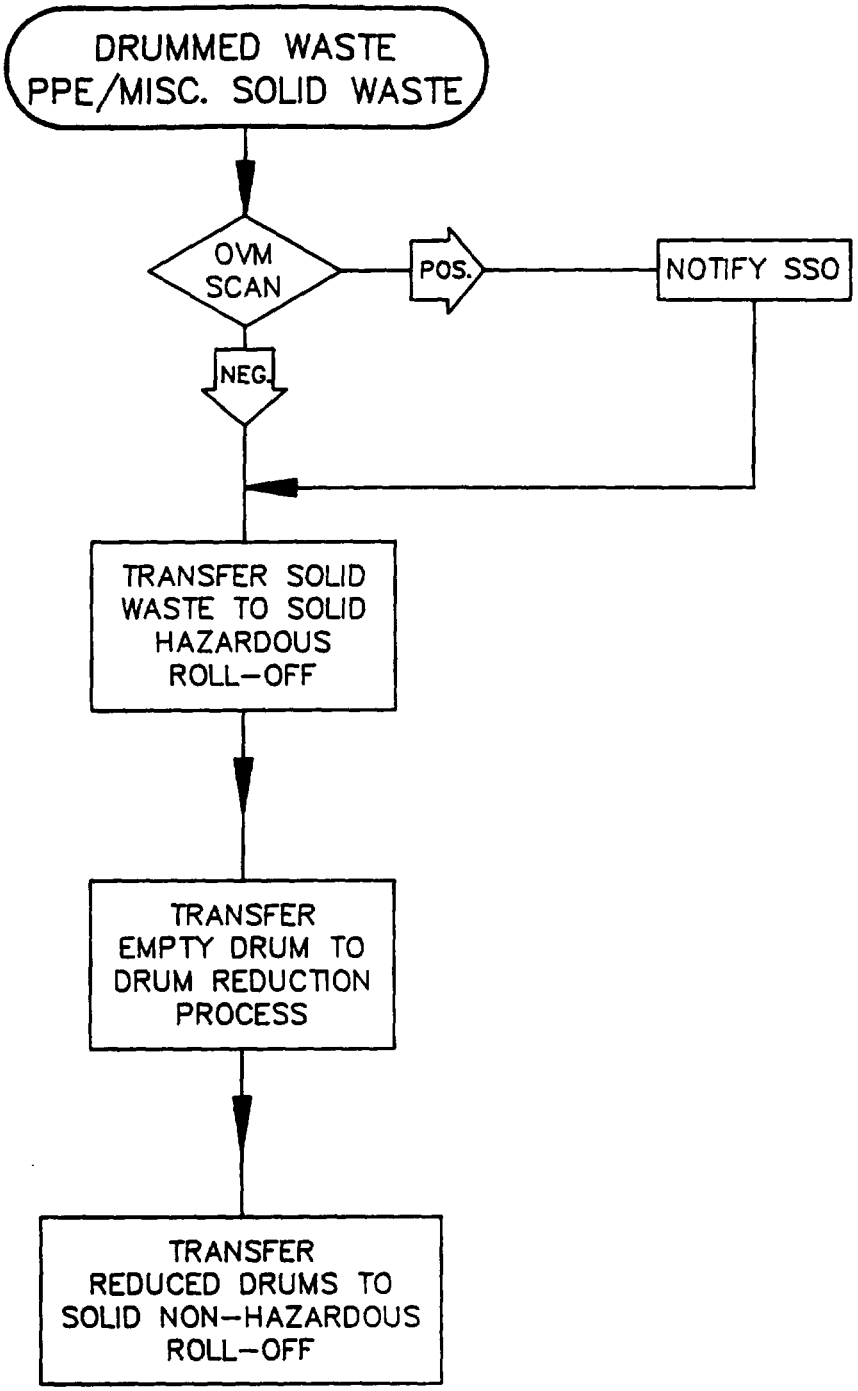
DRUMMED WASTE HANDLING PURGE AND DECONTAMINATION WATERS

ENVIRO-CHEM SUPERFUND SITE — ZIONSVILLE, IN

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST | JOB NUMBER: 2259-320

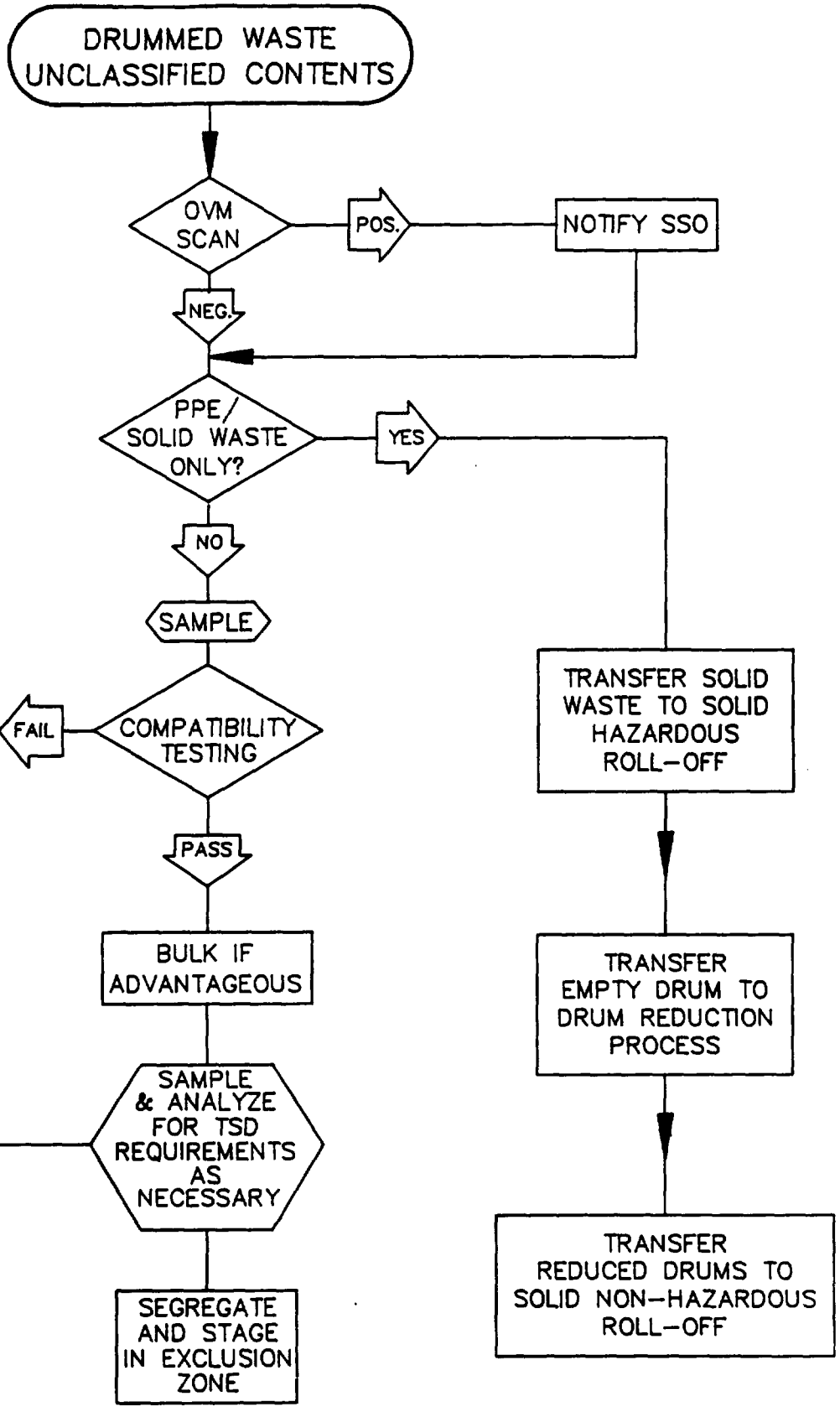
SCALE: NOT TO SCALE | FIGURE NUMBER 5 | REV 0

FILE: \ECC\320\DRUM-H2O 6/21/94 DN-1



FILE: \ECC\320\DRUM-PPE 6XNS4ON~

AWD TECHNOLOGIES, INC AWD TECHNOLOGIES	DRUMMED WASTE HANDLING PPE/MISC. SOLID WASTE ENVIRO-CHEM SUPERFUND SITE — ZIONSVILLE, IN	
	CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST	JOB NUMBER: 2259-320
	SCALE: NOT TO SCALE	FIGURE NUMBER 6 — REV C



AWD TECHNOLOGIES, INC

AWD TECHNOLOGIES

DRUMMED WASTE HANDLING UNCLASSIFIED CONTENTS

ENVIRO-CHEM SUPERFUND SITE — ZIONSVILLE, IN

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST — JOB NUMBER: 2259-320

SCALE: NOT TO SCALE — FIGURE NUMBER 7 — REV 0

FILE: \ECC\320\DRUM-UNC 6/29/94

D

APPENDIX D

BOILER DETAIL (TYPICAL)

(TO BE SUBMITTED WITH FINAL DESIGN)

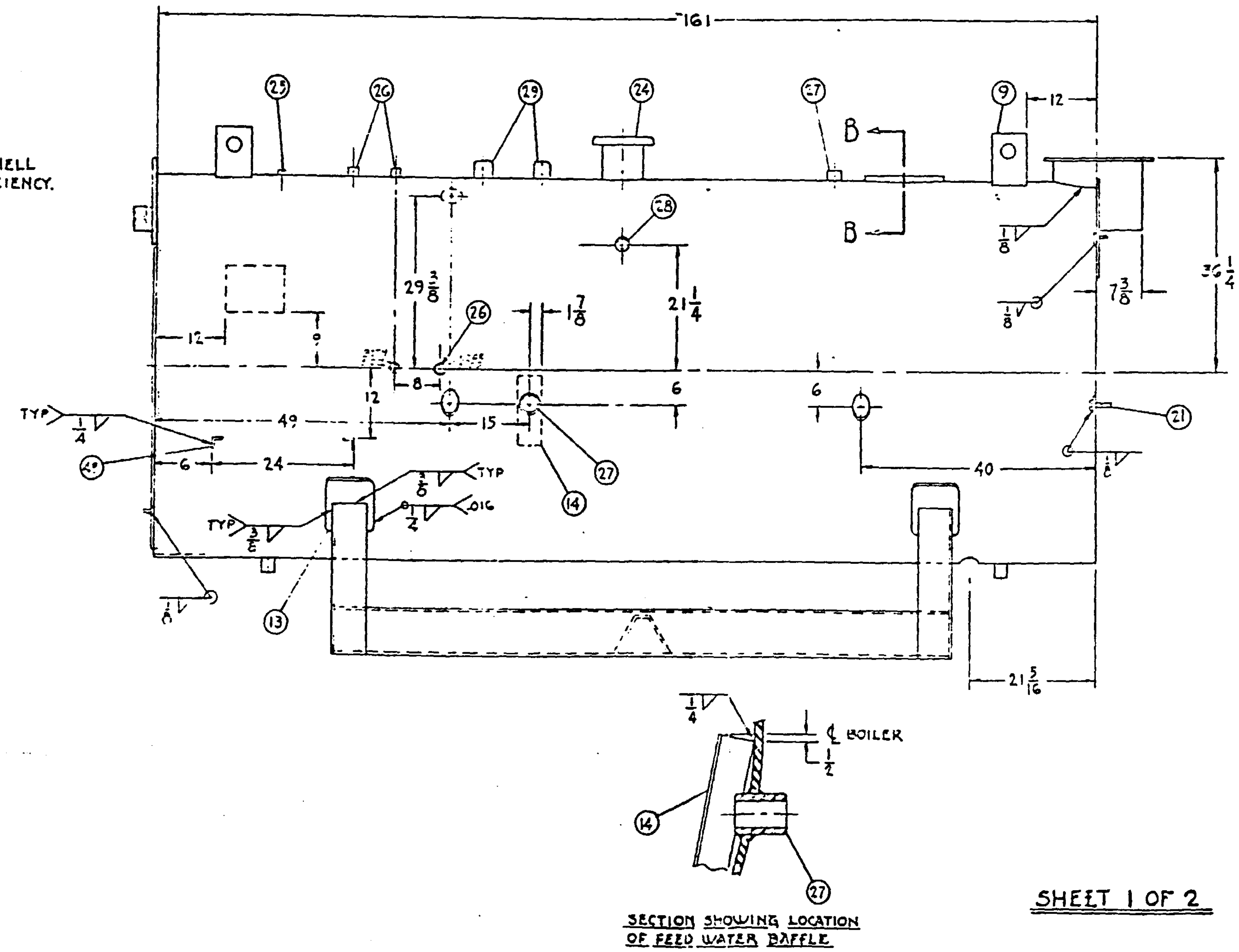
NAT'L BD ____________ (NUMBER)
CERTIFIED BY Y-S
SN ____________ (SERIAL NUMBER)
MAWP 150 LBS
HS 1000
SH 13/32 HD 19/32
____________ (YEAR BUILT)
CRN ____________ (CANADIAN REGISTRATION NUMBER)
FIGURES MUST BE AT LEAST 5/16" HIGH.

BOILER OUTPUT CAPACITIES

1. MAX. STEAM OUTPUT - LBS/HR FROM & AT 212°F: 6900
2. EQUIVALENT HORSEPOWER: 200
3. MAX. BTU/HR OUTPUT: 6,695,000

NOTES:
1100 SQ. FT. HEATING SURFACE, WATERSIDE (NOT ASME CODE)
1000 SQ. FT. HEATING SURFACE, FIRESIDE
150 PSIG STEAM MAX. ALLOW. WORKING PRESS.

MINIMUM LONGITUDINAL EFFICIENCY OF THE SHELL EQUALS 90% OF THE LONGITUDINAL JOINT EFFICIENCY.
HYDROSTATIC TEST PRESSURE - 225 P.S.I.
POST WELD HEAT TREAT IN ACCORDANCE WITH PS-151500



SECTION SHOWING LOCATION OF FEED WATER BAFFLE

SHEET 1 OF 2

ITEM	QUAN.	PART NO.		DESCRIPTION
54	1	127212		FLAT HAND HOLE COVER
53				
52				
51	479	104153		WELD ROD
50	1	125421	A	STAY ROD SUPPORT
49	1	105126		3/4-16NC2 X 2 1/2 LG. HEX HD. CAP SCR
48	2	151474		ANGLE-1/2 x 2 x 2 x 10 LG. CONT PANL SUP
47	1	112693	A	UPPER HINGE SUPPORT ASSY.
46	1	112692	A	LOWER HINGE SUPPORT ASSY.
45	4	80964	A	DRY PAN SUPPORT
44	1	110671	A	STAYROD - 1 3/8 DIA.
43	2	307577	A	BACKING RING - FIRING TUBE
42	2	110669	A	BACKING RING-SHELL
41	1	302410		12 x 16 x 3/8" 300 PSI PRESSED STL. MANHOLE COVER/YOKE
40	1	302408		ELLIPTICAL MANHOLE COVER GASKET 12 x 16 x 1 THK. J.M. KEARSARGE WIRE WOVEN
39	1	302514		ELLIPTICAL MANHOLE RING 12 x 15 x 1 x 4 NOM. DEPTH
38	6	42305		GASKET, 3 1/2 x 4 1/2 x 3/16 THK. ELLIPTICAL HANDHOLE
37	6	105133		3/4 STD. WASHER
36	6	303716		3/4-10NC2 HEX NUT
35	6	51127		TWO PRONGED HANDHOLE
34	6	46140	A	CURVED HANDHOLE COVER ASSY.
33	20	155416	A	ANCHOR 3"
32	1	104346		3 1/2 x 4 1/2 FLEXITALLIC H.H. GASKET
31	8	105135		5/8-11NC2 x 2" LG. H.H. CAP SCR.
30	10	105131		1/2-13NC2 x 2" LG. HEX HD. CAP SCR.
29	2	51132		2 1/2 EX. HVY. WHOLE COUP.
28	1	141165	A	SURFACE BLOWOFF CONN.
27	4	59551		1 1/2" 3000# WHOLE COUP
26	5	59552		1" 3000# WHOLE COUP
25	1	59546		1/4" 3000# WHOLE COUP
24	1	158002	A	4" x 300# STEAM OUTLET CONN. ASSY.
23	1	98178	B	LOWER SEALING EDGE
22	1	98177	B	UPPER SEALING EDGE
21	5	105139		1/2-13NC2 x 3" LG. HEX HD BOLT
20	1	112731	E	REAR HINGE ASS'Y
19	1	198079	A	FRONT. SMOKE BOX. UPPER SECT. ASSY
18	1	98173	A	FRONT COVER SEALING STRIP - LOWER
17	1	307511	C	FRONT. HEAD.
16	2	182186	A	UPPER RETAINING STRIP - ROPE
15	2	120431	A	LOWER RETAINING STRIP - ROPE
14	1	155511	A	FEEDWATER BAFFLE
13	4	80921	A	SADDLE PLATE
12	1	150106	C	CHASSIS ASSY.
11	2	98174	A	REAR COVER SEALING STRIP
10	1	98175	B	REAR COVER FIXED SECT.
9	2	98158	B	LIFTING LUG ASSY.
8	1	141215	B	DRYPAN ASSY.
7	2	105125		3/8-16NC2 x 2" LG. HEX HD. BOLT
6	1	197467	B	FIRING TUBE FLANGE
5	162	98165	A	BOILER TUBE 2" O.D.
4	1	110329	B	STACK ADAPTER ASSY.
3	1	307512	C	REAR HEAD
2	1	307510	B	FIRING TUBE
1	1	111093	B	BOILER SHELL ASSY.

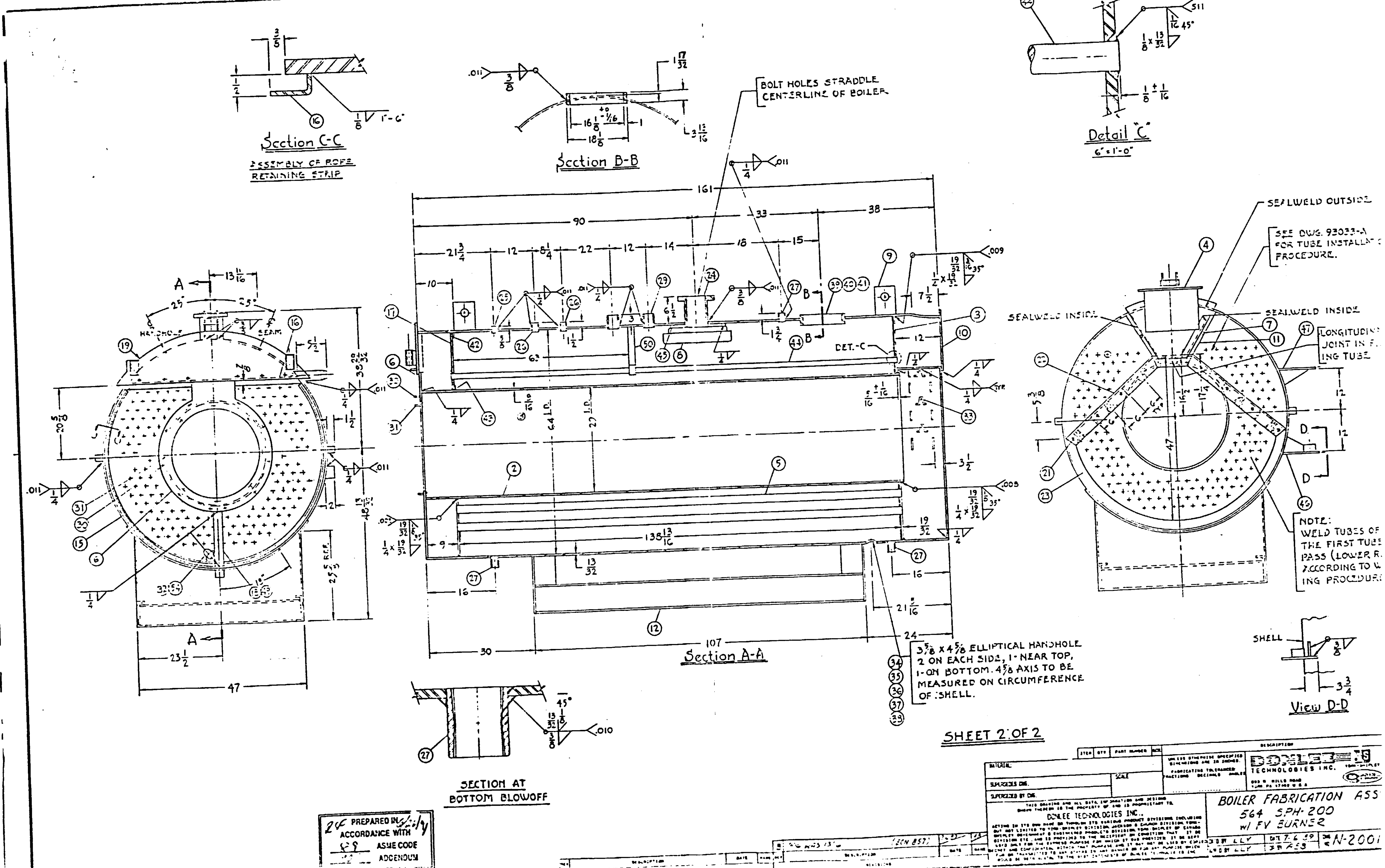
PREPARED IN ACCORDANCE WITH ASME CODE ADDENDUM

MATERIAL:
SUPERSEDES DWG
SUPERSEDED BY DWG
SCALE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

DONLEE TECHNOLOGIES INC.

BOILER FABRICATION ASSY
564 SPH 200
W FV BURNER

IH20017


Section C-C
ASSEMBLY OF ROPE RETAINING STRIP
Section B-B
BOLT HOLES STRADDLE CENTERLINE OF BOILER
Detail "C"
6" = 1'-0"
SEALWELD OUTSIDE
SEE DWG. 93033-A FOR TUBE INSTALL
PROCEDURE.
SEALWELD INSIDE
SEALWELD INSIDE
LONGITUDIN
JOINT IN F
ING TUBE
HANDHOLE
SEAM
DET.-C
Section A-A
NOTE:
WELD TUBES OF THE FIRST TUBE PASS (LOWER R
ACCORDING TO W
ING PROCEDURE
3⅝ x 4⅝ ELLIPTICAL HANDHOLE 2 ON EACH SIDE, 1 - NEAR TOP, 1 - ON BOTTOM. 4⅝ AXIS TO BE MEASURED ON CIRCUMFERENCE OF SHELL.
SHELL
View D-D
SECTION AT BOTTOM BLOWOFF
SHEET 2 OF 2
PREPARED IN ACCORDANCE WITH ASME CODE ADDENDUM
DONLEE TECHNOLOGIES INC.
BOILER FABRICATION ASS
564 SPH-200
w/ FV BURNER
N-2001

APPENDIX E

SPECIAL WASTE CERTIFICATION APPLICATION

Special Waste Certification Application

Indiana Department of Environmental Management
Office of Solid and Hazardous Waste Management
105 South Meridian Street
Indianapolis, Indiana 46206-6015
Telephone: 317/232-4473

For Office Use Only
Case No._____
Reviewer_____

1. Generator Information

Generator Facility Location	Generator Mailing Address
Name	Name
Address	Address
(City) / (State) / (Zip)	(City) / (State) / (Zip)
County	County
Technical Contact and Telephone #	Technical Contact and Telephone #

EPA Identification Number:

2. Waste Information

Waste Name:

Anticipated annual quantity (cubic yards, drums, other):

Disposal frequency (weekly, monthly, annually, one time, etc.):

Type of waste containers (drums, bulk, rolloffs, etc.):

Proposed disposal site:

3. Regulatory Issues

Are any of the following occurring at your facility: (please check)

CERCLIS Clean-up ☐ Hazardous/Solid Waste Enforcement ☐ Corrective Action ☐

Air/Water Issues ☐ Other _____

4. Generator Signature

I hereby certify that the information in this application is true and accurate to the best of my knowledge, and that this waste is not a hazardous waste as defined in 329 IAC 3.1.

Signature / (type or print name) / Date

Title

5. Contractor Information

Applicant (if other than generator)	Proposed Disposal Site
Name	Name Opp No.
Address	Address
/ /	/ /
(City) (State) (Zip)	(City) (State) (Zip)
County	County
Technical Contact and Telephone #	Technical Contact and Telephone #

6. Sampling and Laboratory Information

Laboratory	Sample Collector
Name	Name
Address	Address
/ /	/ /
(City) (State) (Zip)	(City) (State) (Zip)
Technical Contact and Telephone#	Telephone #

7. Renewal Information

Is this application a(n): New Application ? ☐ Renewal ? ☐ Amendment ? ☐

If a renewal, or an amendment, what is the current certification number?

If a renewal, what is the date of the last lab analysis?

Have there been any changes in the process, volumes, or raw materials since the last certification?

Yes ____ No ____ If yes, attach a brief explanation.

Are you aware of any other facts or circumstances which have, or could have, altered the physical characteristics or chemical composition of the waste? Yes ____ No ____
If yes, provide a brief explanation.

8. Waste Characterization

Physical Characteristics: (attach MSD Sheets if Available)

Physical state: Solid____ Semi-solid____ Liquid____ Powder____ Other____

Percent solids _____ %

Fire, explosion, or spontaneous ignition hazard? Yes____ No____

Does this waste contain: Free liqiuds?____ PCB's?____ Asbestos?____ Solvents?____

Odor? None____ Mild____ Strong____ Describe:

Analytical Information

Sampling: Date sample was collected:_____ Sample type: grab____ composite____

Was a sampling plan used? Yes____ No____ If so, attach a copy.

Is the sample representative of the waste?

Results: attach original laboratory documentation; i.e. TCLP (metal, pesticide, organics), corrosivity, ignitability, reactivity, or other. (QA/QC upon request)

Is the waste a listed hazardous waste as defined in 329 IAC 3.1? Yes____ No____

9. Process Description (attach additional pages if necessary)

SPECIAL WASTE APPLICATION INSTRUCTIONS (page 1 of 2)

1.GENERAL INFORMATION: Provide generator name, facility location, and mailing address. Facility location is the street address of the generating facility. This address will appear on the approval. A mailing address should be provided if different from the facility location. Provide an EPA ID number if applicable (i.e. the applicant generates any hazardous waste).

2.WASTE INFORMATION: Provide a waste name, the anticipated volume to be disposed in one year, the frequency of disposal, the type of container used for disposal, and a proposed disposal facility. The IDEM will attempt to approve the disposal site selected by the generator. However, depending on handling concerns and characteristics of the waste(s) and the disposal facility's operational, design, and geological considerations, the generator may be denied access to a particular site.

3.REGULATORY ISSUES: Indicate, by checking the appropriate boxes, whether the generating facility has any issues pending with other regulatory programs or agencies. Of particular importance are any activities that may effect the status of this/these waste(s).

4.GENERATOR SIGNATURE: A designated responsible individual of the generator's staff shall sign the application. A contractor may prepare the application for the generator, but the application is to be signed by the generator. In lieu of a generator signature, the contractor may sign the application if legal permission to do so is given to the contractor. A letter giving consent, with the original signature of the generator, should be provided with the application in this event. Any application which is unsigned or does not have an original signature will not be approved by the IDEM.

5.CONTRACTOR INFORMATION: Provide a name, address, and contact for any contractor or consultant whom may be involved in the application process and the proposed disposal facility. The Operating Plan Permit Number (OPP No.) for the disposal facility must also be included.

6.SAMPLING AND LABORATORY INFORMATION: Provide a name, address, and contact for the laboratory which performed any analytical work for the generator. The individual(s) responsible for sample collection should also be included with address and phone number.

7.RENEWAL INFORMATION: Indicate whether the application for this/these waste(s) is being submitted for the first time, for renewal of an expired approval, or for an amendment to a current approval. If this is a renewal or amendment, indicate whether there have been any changes in the process or raw materials generating the waste, any other circumstances that may have altered the waste characteristics, or any change in volume to be disposed. If there have been, please explain the change.

8.WASTE CHARACTERIZATION:

Physical Characteristics: Provide the requested information.

INSTRUCTIONS (page 2 of 2)

Analytical Information: The generator must demonstrate that a waste is not hazardous under 329 IAC 3.1 in order to dispose of the waste as a Special or Solid Waste. The generator shall indicate that the waste is not hazardous by listing or by characteristics. An analysis is usually required to demonstrate that the waste is not hazardous due to characteristics. Analysis for hazardous characteristics include ignitability (D001), corrosivity (D002), reactivity (D003), Toxicity Characteristic metals, pesticides, and organic compounds (D004-D043). Only those hazardous characteristics that are a potential concern need to be tested. A generator may use their knowledge of the waste stream and generating process to make a waste determination in lieu of testing. In this case, the generator must supply the documentation, such as Material Safety Data Sheets (MSDS), used to make such a determination. However, further analysis shall be required if the IDEM determines that it is necessary in order to properly characterize the waste(s).

Staff may also require other parameters, such as PCB's, other metals, chlorides, phenols, etc. be tested in order to determine the potential hazards associated with the waste and appropriate disposal requirements and facility.

Sampling: Provide the date the sample was collected and the type of sample taken. Include any other information, such as sampling plans, which would demonstrate that the sampling is representative of the waste(s). In order to demonstrate that a waste is non-hazardous, each waste stream shall be sampled independently. If the generator wishes to composite different waste streams into one sample, a written justification for such compositing shall be provided. If the IDEM determines the composite to be inappropriate, re-analysis shall be required.

Results: A copy of <u>original</u> laboratory analyses shall be provided with the application. (Complete QA/QC and chain-of custody shall be provided upon request). Please make sure that all analyses are properly identified. An application will not be reviewed without this information.

If you have any questions concerning sampling and analysis, please contact staff of the Solid Waste Permits Section at (317) 232-4473.

9.Process Description: In order for staff to determine whether an appropriate waste determination has been made, it is required that a comprehensive description of the process generating the waste be provided. Also, include a list of all the raw materials or chemicals used in the process. If needed, attach a separate sheet for this section. (If this waste is the result of a clean-up from a spill or release of a material, provide a complete description of the process that generated material and any sampling plans or site assessments/investigations if performed. Indicate whether the release was reported to the Office of Environmental Response and provide the Incident Number.) Failure to provide this information will result in a delayed review of your application as staff attempt to obtain such information.

Complete Information Will Greatly Enhance The Efficiency Of Your Application's Review. Detach instructions and forward application to the IDEM

11/92

SPECIAL WASTE DISPOSAL NOTIFICATION

GENERATOR INFORMATION

Company Name: Tecnical Contact:
Mailing Address: Generator Location:

Emergency Response Phone Number:

WASTE CERTIFICATION INFORMATION

Waste Name: Certification Number: Expiration Date:

Description of Waste:

I Hereby certify that the above information is true and accurate to the best of my knowledge.

Name(print or type) Signature Date(MM/DD/YY)

TRANSPORTER INFORMATION

Company Name: Mailing Address:

Driver's Signature Date(MM/DD/YY)

DISPOSAL SITE INFORMATION

Site Name: OPP Number: Amount:

Authorized Signature Date(MM/DD/YY)

Pursuant to Solid Waste Rule 329 IAC 2-21-15 (Facility responsibility for special waste disposal) and 329 IAC 2-21-16 (Generator responsibility for special waste disposal), all special waste delivered for disposal shall be accompanied by a disposal notification. As stated in each of these respective cites, the generator must provide the disposal facility with a written disposal notification for each load of special waste to be disposed of and the solid waste disposal facility operator shall check each load of special waste with the information provided. The solid waste disposal facility shall also maintain the disposal notifications until such time as certification of post-closure is deemed acceptable for the site.

Pursuant to Solid Waste Rule 329 IAC 2-14-8 (Records and reports), all solid waste disposal facilites shall submit to the commissioner a quarterly report which includes the origin of the solid waste compiled by county, or by state if the waste originated outside of Indiana. The origin of the waste must be provided to the facility by the hauler and the hauler must estimate, by percent, the composition of a mixed load. Therefore, the county and/or the state of origin is now required information on the special waste disposal notification (see above).

The quarterly report, however, does not replace the monthly report which is required from all solid waste facilities that receive special waste. If you have any questions regarding this matter, please contact this office at 317/232-4473.

7/92